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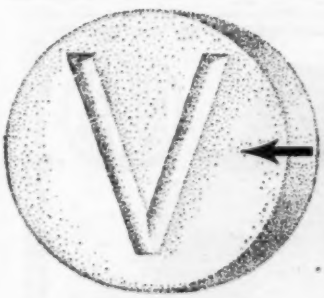

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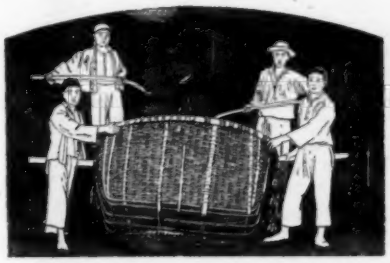

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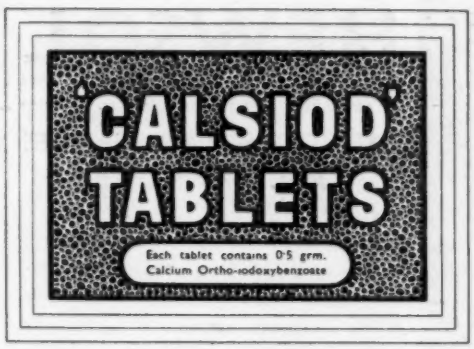

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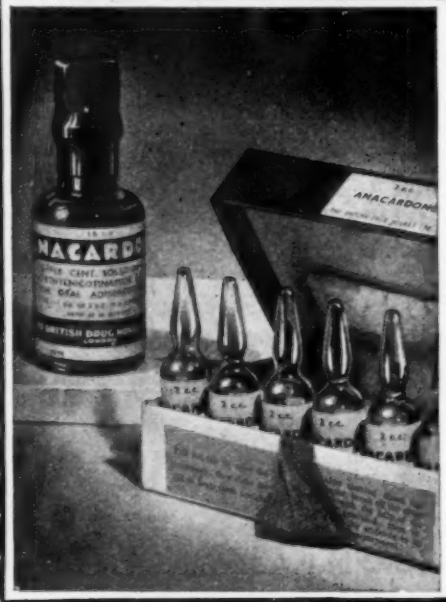

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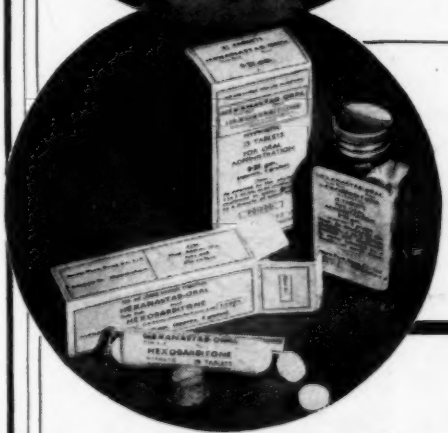

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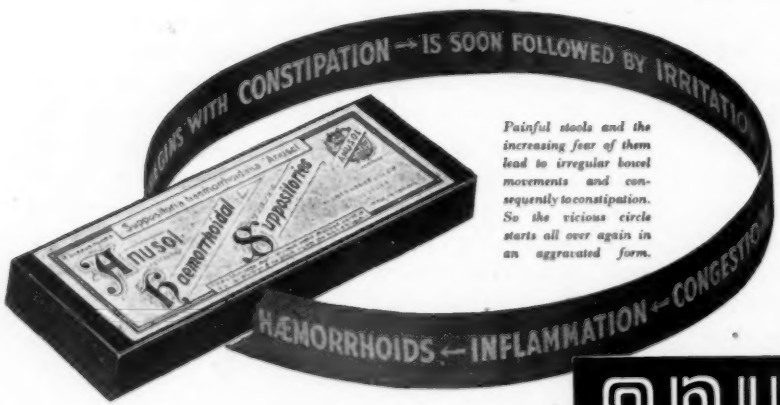

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* *Note the exceptionally high protein and low fibre content.*

Descriptive literature sent to Medical men on application. *Vitamins Ltd. (Dept. LV), 23, Upper Mall, London, W.6*

ORIGINAL ARTICLES

AN OUTBREAK OF PARATYPHOID B IN BRISTOL

I. G. DAVIES, M.B. LOND., D.P.H.
DEPUTY MEDICAL OFFICER OF HEALTH, BRISTOL; DEPUTY DIRECTOR OF PREVENTIVE MEDICINE LABORATORIES, UNIVERSITY OF BRISTOL

K. E. COOPER, M.R.C.S., PH.D. LEEDS
SENIOR BACTERIOLOGIST AND LECTURER AT THE LABORATORIES

D. S. FLEMING, M.D. MCGILL
MEDICAL OFFICER TO THE AMERICAN RED CROSS AND HARVARD FIELD HOSPITAL UNIT

With a Note on the
ROUTINE INVESTIGATION OF FOOD-BORNE EPIDEMICS

H. M. GOULD, M.S.I.A.
SENIOR FOOD INSPECTOR

RONALD WILLIAMS, M.S.I.A.
FOOD INSPECTOR

DURING 1941 there was an epidemic of paratyphoid B in Bristol, and during the period Aug. 18 to Oct. 30 268 suspected cases were notified; of these, 244 gave evidence of paratyphoid B infection. The dates of onset of the proved cases ranged between July 28 and Oct. 12. On Aug. 19, 5 cases were confirmed bacteriologically as paratyphoid B and these were followed by the notification of a further 10 cases on Aug. 20. By the end of the first week over 70 cases had been notified and 145 by the end of the second week. Cases continued to be notified up to Oct. 20, by which time a total of 244 persons had given evidence of paratyphoid B infection. These were confirmed as follows: paratyphoid B isolated from fæces, 214; diagnostic agglutination reaction, 13; confirmed in other laboratories, 17. In all, 203 cases were clinical paratyphoid fever and 41 were intestinal carriers; 167 of the 203 cases were primary and the remaining 36 secondary.

SOURCE OF INFECTION

Investigations were begun on Aug. 19, immediately after the confirmation of the 5 cases. A common food was soon established and confectionery prepared by a firm A in the city came under suspicion. On Aug. 21, a full investigation of this firm's premises and staff was made and the investigation narrowed itself down to a girl employee (X. Y.). This girl had had a vague history of headaches and malaise and had ceased to work there on Aug. 2. Her home was visited on Aug. 21, when it was found that she had subsequently been employed at two places—B (a café) and C (a bakery), where she was now working. As she still complained of headaches, she was persuaded to have blood and fæces examinations and to stop work immediately until the results were obtained. *Bacterium paratyphosum B* was isolated from her fæces. Full precautions against any further infection were taken and arrangements made to examine blood and fæces of all the workpeople engaged in the handling of food at firms A, B and C. Specimens of confectionery and food and all the ingredients used in the making of artificial cream were also examined at these places, with negative results.

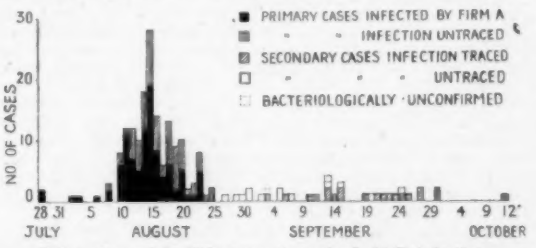
Of the 167 primary cases, 102 (61%) had consumed artificial cream from firm A and opportunities for infection of this cream by X. Y. were present in each case. Of the 41 intestinal carriers, 19 had consumed artificial cream from this firm; 9 were members of families in which a known case had occurred and 6 belonged to a family known to have consumed infected cream; 13 were untraced.

We are satisfied that the cause of the explosive outbreak of clinical cases and of the carrier state in 25 persons was artificial cream infected by X. Y., although at no time was *Bact. paratyphosum B* isolated from any foodstuff or from the artificial cream which was undoubtedly the vehicle of infection. It must be remembered that the foodstuffs and cream were not examined until Aug. 21, the earliest date at which firm A could have come under suspicion, and by this time infection of the food at this particular firm must have ceased, since the only infected person found had left their service 19 days previously.

An analysis of the dates of onset (see figure) show that the earliest cases began on July 28, but the numbers increased rapidly after Aug. 8, rising to a sharp peak on Aug. 15 (28 cases in one day) with a rapid fall by Aug. 25. This explosive primary wave accounts for 167 of the total 203 clinical cases; 3 primary cases are not included in the graph because their onset dates were not precisely defined.

CASE-HISTORY

X. Y., the girl with whom the outbreak originated, was aged 18 and had been working as a clerk in various posts up to April 10, 1941, when she went to a bakery to learn confectionery-making. She began to work for firm A on July 10, and was engaged in preparing artificial cream for making jam and cream cakes. She spooned this cream into a cone-shaped confectionery bag, and it was her custom to bite off the apex of the bag and squeeze out the cream for the decoration or filling of cakes and pastries. She left this firm on Aug. 2, when it closed for Bank holiday, and did not return; the firm was under the impression that she was away ill, since she was said to have complained of headaches. (No other person failed to return to work at this firm on Aug. 5). Actually, she started work with another firm, B, on Aug. 5, and was later transferred from this shop and café to their main bakery, C, on Aug. 17, where she was working when visited on the 21st.



Dates of onset in 200 cases of paratyphoid B infection.

She was still complaining of headaches. Samples of blood and fæces were obtained on Aug. 21. The blood gave negative agglutination for TAB (H) at 1/25 dilution and agglutination of T (O) at 1/50. *Bact. paratyphosum B* was isolated from the fæces on this date. She was removed to hospital, where she developed clinical paratyphoid fever and on Aug. 26 became a fairly severe case with a rapid rise of temperature. On Sept. 2 her agglutination was 1/5000 for para B (H), negative for T (H) and para A (H) at 1/25, and positive for T (O) at 1/50. Her fæces were positive on Sept. 2, negative on Sept. 23, positive again on Sept. 29, then negative on Oct. 5 and 6.

RELATION OF X. Y. TO THE OUTBREAK

Repeated examinations of the fæces and urine for *Bact. paratyphosum B* and the agglutination reactions of all persons working at firm A were made and except for X. Y. all gave negative results. Full opportunities existed at all material times for the infection of the cream by this girl, who was the only person in this firm found to be excreting *Bact. paratyphosum B* in the fæces. Moreover, no evidence of infection of food prepared by this firm after Aug. 2 (the date when X. Y. ceased work there) has been discovered. Despite the fact that agglutinations for paratyphoid B did not appear in her blood until Aug. 21, and that she did not develop into a well-defined clinical case until Aug. 26, it is highly probable that she was infective before Aug. 2.

The figure suggests that heavy infection of cream at firm A was taking place around Aug. 2. Further, since the firm was closing down for the bank holiday on Aug. 2, customers purchased and kept pastries for consumption during the succeeding three days, which included Sunday and bank holiday Monday. The atmospheric temperature on those days was high, being 74° F. on Aug. 1, 78° F. on Aug. 2 and 75° F. on Aug. 3; indeed, except for July 25, these were the hottest days in August and the latter part of July. Artificial cream is undoubtedly a good medium for *Bact. paratyphosum B*, and under rough incubation conditions would produce a very heavy infection. We are able, through a lucky coincidence, to give an excellent example of this.

Table I shows that in 23 cases we were able to ascertain with some accuracy the actual date on which the artificial cream was eaten, and from the known dates of onset to calculate the incubation period in each case. This varied from 4 to 19 days, with a mean of 12 days. With such a short series this is not a good statistical mean, but it is significant that in the graph of the dates of onset the distance from Aug. 3 to the peak Aug. 15 is also 12 days, and that the number of primary cases falls symmetrically

TABLE I—INCUBATION PERIODS

Case	Cream consumed	Onset	Incubation period (days)	Case	Cream consumed	Onset	Incubation period (days)
1	Aug. 2	Aug. 10	8	50	Aug. 2	Aug. 13	11
2	,, 4	,, 11	7	68	,, 7	,, 13	6
3	,, 2	,, 10	8	84	,, 1	,, 13	12
6	July 31	,, 11	11	95	July 16	,, 14	19
7	Aug. 2	,, 14	12	119	Aug. 2	,, 20	18
20	,, 2	,, 15	13	126	,, 8	,, 15	7
21	,, 5	,, 15	10	139	,, 6	,, 18	12
28	,, 2	,, 15	13	159	July 30	,, 6	7
29	July 26	,, 11	16	169	,, 26	,, 11	16
33	Aug. 7	,, 11	4	205	Aug. 2	,, 20	18
38	,, 1	,, 14	13	218	July 28	,, 11	14
44	,, 2	,, 15	13				

on either side of this peak date. In all these cases we know the dates on which the cream was purchased; but there is an additional fact in connexion with cases 33 and 68 which allows us to draw a significant conclusion. In these two cases it so happened that the pastries were purchased on Aug. 2 for consumption at a party to be held on Aug. 7. They were consumed on this latter day and it is noteworthy that these are the two shortest incubation periods (4 and 6 days respectively) found in the series. This suggests that as a result of the incubation of the infected cream for 5 days a massive infection had resulted, thus shortening the incubation period in the two persons infected.

On Aug. 2, X. Y. took home cream buns from firm A, which she shared with some members of the family with whom she was living; a case occurred in this family. It is reasonable, then, to suppose that throughout the latter part of July she was probably intermittently infecting the cream with small doses and during the holiday week-end reinfected herself with a massive dose. This dose was sufficient to overcome the immunity necessary for her carrier state and so she became a clinical case. There is much evidence in the published work on enteric infection to suggest that this sequence of events does occur. Auto-infection of typhoid carriers has been reported, despite the difficulties of obtaining conclusive proof of such happening.[1]

The higher proportion of ambulant cases usually found in paratyphoid as compared with typhoid probably means that auto-infection is more common in paratyphoid B. Provided the time, temperature and medium are suitable for multiplication of organisms, an initially light infection by an ambulant case or carrier might result in such a massive dose that the low immunity of the carrier himself is overcome. Since such patients make their appearance as fresh cases they are regarded as victims of the epidemic, when they may really have been a cause. Investigation of firms B and C at which X. Y. had worked after Aug. 2 revealed nothing. Only one case was doubtfully attributed to this place, despite the fact that X. Y. was known to be excreting *Bact. paratyphosum B* at this time. On the other hand, she was doing different work—mainly preparing chocolate shortbread which was probably not such a good medium for infection as artificial cream. In spite of exhaustive inquiry she could not be connected with any previous case in Bristol or elsewhere.

There is evidence that in every population there is a pool of *Bact. paratyphosum B* carriers who may be sparse intermittent excretors; and an explosive outbreak will certainly arise when the following conditions are simultaneously present: a carrier; a suitable vehicle with opportunity for the carrier to infect this vehicle; high external summer temperature; favourable opportunity for incubation of the infected vehicle, such as imperfect storage. All these conditions were present in this outbreak.

The evidence is very strong that X. Y. was the cause of the outbreak, but further considerations arise as to how she became a carrier. Was she herself infected while serving her apprenticeship at the bakery before July 10? We can throw little light on this except for one rather inconclusive point: during September, 9 infections were found in people who had eaten cakes from the bakery at which X. Y. served her apprenticeship. No case which could be attributed to this firm had occurred before Sept. 1st. The bakery was fully investigated but no-one working there showed any evidence of infection. There is a slight possibility, however, that someone at this firm had been a sparse intermittent carrier and had passed the infection on to X. Y.; but because the necessary conditions were not all present this problematical unknown had not succeeded in doing what X. Y. subsequently did when conditions were favourable for producing an outbreak.

Between Sept. 18 and Oct. 14, a further 9 cases were discovered which had consumed food from a confectionery shop in the city. No connexion between this shop with these 9 cases and the larger outbreak could be traced, but the daughter of the owner of the shop had been ill for 3 weeks with an illness alleged to be influenza, and which we showed to be paratyphoid B. She had been serving in the shop every Saturday before her illness and was probably the cause of the other cases. No member of the staff of this shop showed evidence of infection. Again, it is probable that this girl had not succeeded in producing a large outbreak because what we regard as the four primary conditions were not present.

EPIDEMIOLOGY

Of the 244 established cases of paratyphoid, 149 (61%) were traced to known sources of infection; that is to say, they either consumed food material which was known to be infected or were in intimate contact with a known case of paratyphoid at the time when they were infected. Of the remaining 95 untraced infections, 65 began during the primary wave of the epidemic and had a similar range of onset dates and a similar peak, the maximum number of onset dates occurring on Aug. 15. Thus in all probability these cases at least directly resulted from the infected material sold on the bank holiday week-end.

A number of strains of paratyphoid organisms isolated from cases arising both in the primary wave and from the various sources of infection after that were examined by Mr. A. Felix, D.Sc., who reports that they are all of the same phage type. Although this agrees with the argument that the strains have arisen from one single source it is not proof of this, since the particular type (type I) is at present common throughout the country.

TABLE II—AGE- AND SEX-DISTRIBUTION

Age-group (year)	Cases in each group M.	F.	Total	% of series	Age-group (year)	Cases in each group M.	F.	Total	% of series
0– 5	16	27	43	17·6	41–45	2	9	11	4·5
6–10	11	17	28	11·5	46–50	1	5	6	2·5
11–15	13	19	32	13·1	51–55	0	2	2	0·8
16–20	15	35	50	20·5	56–60	0	1	1	0·4
21–25	6	17	23	9·4	61–65	0	2	2	0·8
26–30	3	8	11	4·5	over 70	2	3	5	2·1
31–35	3	12	15	6·2					
36–40	4	11	15	6·1	Totals	76 (31%)	168 (69%)	244	100

M = Male; F = Female.

Table II shows the age- and sex-distribution of cases; it will be noted that the age-groups under 20 account for 62·7% of the total cases, and that slightly over two-thirds of the cases were females. Only 7 (2·9%) were nursed at home, and there were 2 (0·8%) deaths in the whole series.

The city was divided for investigation purposes into six divisions and the percentage of cases in each division was as follows:

Division 1	30·2%	Division 4	6·8%
,, 2	29·4%	,, 5	14·9%
,, 3	18·7%	,, 6	0

It is noteworthy that division 6 had no cases and was not served by firm A or any of its subsidiary branches.

1. Ledingham, J. C. G., and Arkwright, J. A. (1912) The Carrier Problem in Infectious Disease, London, pp. 77 and 150; Wilson, J. S. *J. Hyg., Camb.* 1938, **38**, 508.

Divisions 1–5 were all served by firm A or its subsidiaries. Some 60% of the cases arose in divisions 1 and 2 together, and these were also the principal districts supplied by firm A; the firm itself is situated in division 2 and part of division 1 is served by firm A only. There are 12 large bakery and confectionery establishments in Bristol. Firm A's business represents only about 14·8% of the total, yet over 60% of the cases were traced to this firm.

GENERAL CONCLUSIONS

In non-epidemic times there are people in every city intermittently excreting *Bact. paratyphosum B*, and it needs certain primary conditions simultaneously present before an explosive outbreak will occur. The most reliable method of controlling an outbreak is by bacteriological examination of the fæces, and we are convinced that control is not possible merely by Widal testing. In this outbreak and in a previous outbreak in this city [2] we have established that a relatively large proportion of carriers who are excreting paratyphoid bacilli show no significant serological change at that time. Unless arrangements are made for the bacteriological examination of every suspected person and contact, numbers of dangerous infections will be missed. There is evidence to show that in any outbreak the incubation period of the individual case varies with the infecting dose.

An epidemiological team is necessary, headed by an epidemiologist and bacteriologist working together in the laboratories. Such a team is described below.

Control of the methods of manufacture of food is necessary. There are a number of methods of manufacture in which conditions may be said to be almost ideal for the infection of food—for example, in one stage of the manufacture of artificial cream the food handler is literally up to the elbows in cream.

Investigation of Food-borne Epidemics

In Bristol the food inspectors' department is housed in the same building as the preventive medicine laboratories of the University of Bristol. The medical officer of health is professor of preventive medicine and also administrative director of the laboratories. He is assisted by the deputy medical officer of health, who is deputy director of the laboratories, and by the senior bacteriologist, together with a team of food inspectors. The importance of this arrangement lies in the fact that there always exists a coördinated team and routine arrangements to deal with food-borne disease. This team can be augmented at any moment on the field investigation side by sanitary inspectors and health visitors—the whole being directed by the medical officer of health and the senior bacteriologist.

Notifications by medical practitioners of all cases of food-borne disease are received by the medical officer of health and immediately relayed to the food inspectors' department. At the same time the bacteriologist is notified. A food inspector then proceeds to the home of each patient and carries out a primary investigation into the history of the patient, date of symptoms, contacts, visits made and visitors received. From the information obtained the probable period of infection is calculated at this stage within the widest limits. The inspector also inquires about sources of supply of all foods consumed by the patient during this period.

As soon as it becomes evident that cases are beginning to share a probable period of infection an intensive inquiry is directed to this period by the use of detailed food lists, which coupled with the primary investigation records prove valuable epidemiological tools. A detailed food list is headed with the name and address of the patient and the dates of the probable period of infection; the list includes 127 varieties of food and is fairly exhaustive. It is found that much more detailed information is obtained when persons are allowed to retain the list for a day or so for consideration by the whole family than when questioned at length on the first visit. This procedure saves the investigator's time. The lists are collected, and sources of food-supply divided into groups (such as grocer, dairyman, fishmonger) are searched for common factors. Caution is necessary in the interpretation of these lists; thus a firm may appear as the supplier of pastries in 90% of the cases in a particular district, but it may so happen that the firm is the only confectionery in that district.

2. See *Lancet*, 1940, ii, 778.

At the time of the primary investigation the inspector arranges that all contacts and suspected persons are supplied with fæces outfits for the early submission of specimens. As soon as suspicion is aroused that an outbreak is impending, the medical officer of health augments the team with additional sanitary inspectors and health visitors who form two teams of field investigators, the sanitary inspectors dealing with all food shops and premises and the health visitors with home visits. All suspected homes and contacts are visited every 3 days.

When it is found that certain food premises appear to be a common factor, a complete investigation is made into the methods of production, materials used, and especially into the state of health of the staff, attention being particularly directed to the time of the probable period of infection. The firm is asked to provide a statement containing such information as the number of staff, absentees, dismissals, resignations, new appointments, and also names of retailers supplied by them. All employees who are, or have been, absent during the period in question, or who have a history of illness, are followed up and persuaded to have blood and fæces examinations. The remainder of the staff are dealt with in the same way. Where a suspected firm, such as firm A in the recent epidemic, is found to be supplying a large number of retailers, these are investigated by the team of sanitary inspectors who carry out the routine inquiries into the health of the staffs at these subsidiary firms. All information collected by the team is referred to the food inspectors for detailed investigation, as before. Where contacts are employed at food places they are not permitted to return to work until three fæces specimens have been found negative. It was recently noted that all the employers concerned were in favour of this practice and were willing to pay their employees for the time so lost.

The food inspectors are thus receiving hourly reports from the field investigators and they in turn consult with the medical officer of health and the senior bacteriologist. At short intervals all the members of the team meet to report progress and to receive further instructions. At every stage the whole investigation is under strict bacteriological control. At the same time instruction of the staff and management of all food premises involved in the methods of protection of foodstuffs from infection is undertaken. Experience has shown that such instruction is welcomed.

Summary

In an epidemic of paratyphoid B in Bristol the vehicle was artificial cream infected by a person who was a carrier and later became a case.

Certain conditions must be present before an epidemic will arise from a food. They are: a carrier or early case handling a suitable vehicle, such as artificial cream; suitable external climatic conditions, such as high external summer temperature; and imperfect storage of the food, giving a favourable opportunity for incubation.

In investigating an epidemic of food-poisoning there must be complete teamwork between the bacteriologist, epidemiologist and their field workers, with frequent meetings of the investigating teams.

The best method of bacteriological control of epidemics of paratyphoid B is by examination of the fæces; Widal testing will miss large numbers of cases in the early stage. Bacteriological examination must also be made of the fæces of all contacts and also of people engaged in handling food, since food-handlers are often in intimate contact with the food.

The management of all food factories must be impressed with the importance of strict cleanliness among food-handlers. Adequate washing arrangements and clean linen must be provided with precise instructions for using such facilities.

In trying to discover a common food factor exhaustive food lists must be issued to the households of suspected cases, and the family must have time for considering such lists. Verbal inquiry of members of the family is not enough.

Notification of disease, bacteriological and epidemiological control should be centralised for rapidity of action.

We thank Prof. R. H. Parry for permission to publish this paper; and Dr. A. Felix, of the National Institute for Medical

Research, for phage typing a number of the paratyphoid stains. The Health Committee of the city of Bristol, and the Medical Officer of Health gratefully acknowledge the help of the Harvard team of the American Red Cross Hospital, who provided a medical officer, two bacteriologists, six trained fever-hospital nurses and six field investigators during the whole period of the outbreak. Our thanks are also due to Dr. J. E. Gordon, director of the American Hospital, for his help.

A FATAL CASE OF PARATYPHOID B INFECTION

DEVELOPMENT OF THE CARRIER STATE

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IN the Bristol epidemic of paratyphoid B reported by Drs. Davies, Cooper and Fleming[1] there were two deaths. One was a child who developed paratyphoid while in hospital for Pfeiffer's bacillus meningitis, and on whom no autopsy was performed. The other was a woman whose illness terminated with intestinal hæmorrhage and whose autopsy findings are reported here.

CASE-REPORT

A woman, aged 37, had headache dating from Aug. 13, 1941, and subsequent diarrhœa and abdominal pain. The appearance of a few rose spots on the abdomen led to her admission to hospital on Aug. 22. The Widal reaction was positive for *Bacterium paratyphosum B* (H) 1/2500+ and (O) 1/50. Culture of stools was positive. Gross hæmorrhage appeared first per rectum on the 31st, and she became drowsy with falling blood-pressure and hæmoglobin until her death on Sept. 4, the twenty-third day of her illness.

The *autopsy* was performed six hours after death. A salient feature of the gross examination was extensive ulceration of the whole length of the colon, from the cæcum to the rectum. Ulceration of Peyer's patches in the ileum was less severe. In places large areas of mucosa were entirely denuded from the colon and many small vessels had evidently contributed to the hæmorrhage which filled the large bowel with clotted blood. Some of the ulcers reached the musculosa but there was no danger of perforation and a little hyperæmia of the serosa was the only external indication of the severe disease within. Apart from general enlargement of the mesenteric lymph-nodes and the characteristic typhoid splenomegaly the only gross feature was the presence of half a dozen small cholesterol and pigment gall-stones that had clearly been formed before this illness.

Bacteriology.—A culture taken from the contents of the gall-bladder gave a pure growth of *Bact. paratyphosum B.*

Histology.—Two points of interest arose in the histological study of the case: the distribution of bacilli in the organs, and the mode of formation of the focal necroses. The wall of the gall-bladder was not inflamed and careful search revealed no bacilli within the mucosa, though some were seen on the surface. In the liver enormous numbers of bacilli were found lying in the bile canaliculi between the columns of liver cells (fig. 1) but there was neither necrosis nor cellular reaction alongside them. This finding, together with the remarkable absence of bacilli within the focal necroses in the liver, suggest that bacilli may grow within the liver without necessarily producing any local lesions. A long search was required to discover any bacilli in the splenic pulp or in the bone-marrow in spite of the presence of numerous focal necroses, and only an occasional small collection of organisms was found in the interstitial tissue of the kidney. Focal necroses in different stages of development were found in the liver, and one could see clearly (fig. 2) that they arose in clumps of macrophage cells filling blood sinusoids. The adjacent liver cells became necrotic secondarily, and the absence of bacilli within the necroses suggested that direct bacterial action on the liver was not responsible for the lesions. The clumps of macrophages were held together in part by a meshwork of fibrin, and it was within them that the earliest signs of necrosis were found. Focal necroses in the spleen and bone-marrow and in the inflamed lymphoid follicles of the bowel and mesenteric lymph-nodes apparently arose in like manner.

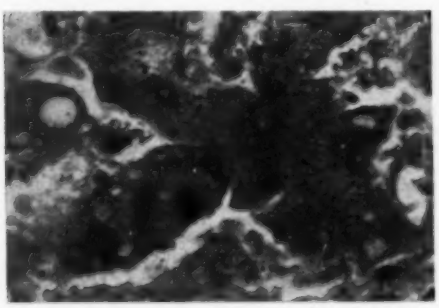

FIG. 1—Bacilli lying in bile canaliculi between the liver cells. Pappenheim's methyl green pyronin stain. (× 1000.)

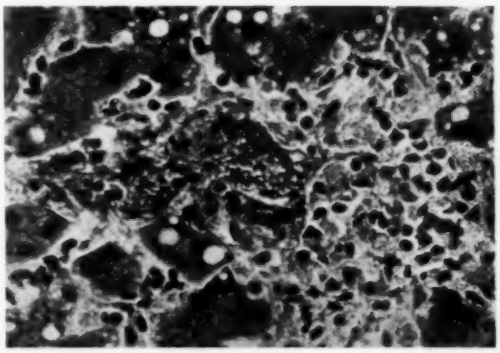

FIG. 2—Early focal necrosis of liver. A sinusoid is blocked with macrophages undergoing necrosis. Dark strands of fibrin are seen in the centre. Masson's trichrome stain. (× 400.)

DISCUSSION

Nichols[2] showed that typhoid bacilli in circulation in the blood-stream pass from the liver sinusoids into the bile canaliculi and so appear in the bile, and it is generally held that the organisms may continue to proliferate within the intrahepatic bile-channels as well as in the wall and lumen of the gall-bladder. In chronic enteric carriers the occurrence of gall-stones and cholecystitis is well recognised, and cholecystectomy has often been performed to end the carrier state. In some of these cases where millions of typhoid bacilli were found in the contents of the gall-bladder, careful histological examination of its wall has failed to show any lesions that can be attributed to typhoid rather than to gall-stones. This led Garbat (quoted by Browning[3]) to express the view that the carrier state in such cases is maintained by the gall-bladder acting as "a test-tube containing the bile medium in which the typhoid bacteria propagate without affecting the gall-bladder itself."

There is also evidence that biliary infection may persist in the absence of the gall-bladder. This seems to be established by the case of congenital absence of the gall-bladder in a typhoid carrier recorded by Zarzycki (quoted by Browning); in this case there were calculi in the bile-ducts. Browning concluded from a survey of reported cases that cholecystectomy effects a cure in 75% of intestinal carriers; in the remainder one may assume that the bacilli continued to proliferate in the bile-ducts or in the bowel, and one would like to know, in the former case especially, whether and to what extent the presence of bacilli is harmful to the carrier.

In the case of active paratyphoid now reported the great number of bacilli in the bile canaliculi cannot be entirely due to post-mortem proliferation, since the autopsy was performed six hours after death and very few bacilli could be found in other organs, in spite of the presence in them of numerous focal necroses. No blood-culture was made but since there was a high agglutinin titre on the tenth day of the disease and death occurred

1. Davies, I. G., Cooper, K. E. and Fleming, D. S. *Lancet*, 1942, i, 129.
2. Nichols, H. J. *J. exp. Med.* 1916, **24**, 497.
3. Browning, C. H. *Spec. Rep. Ser. med. Res. Coun. Lond.* No. 179, 1933, p. 13.

on the twenty-third day it is unlikely that many bacilli were passing from the blood sinusoids into the bile canaliculi. One may conclude that their presence was due to proliferation within the bile canaliculi during life and yet the immediately adjacent liver cells show no recognisable lesions other than some fatty infiltration. This absence of damage to the liver cells has been described by MacCallum,[4] who also drew attention to the relative absence of bacilli from the focal necroses.

It would thus seem that the focal necroses in paratyphoid B, as in typhoid, arise within clumps of macrophages and are not due to a local proliferation of bacilli. The bacilli, even in the acute stage of the disease, do not seem capable of producing direct necrosis of the organs they invade. In convalescence the macrophage response in the tissues subsides and it is doubtful whether any more necroses develop. The beneficial effect of removal of a diseased gall-bladder in eradicating the carrier state may be taken to indicate either that the focus of infection had been removed, or, as seems to me more likely, that an established chronic inflammation or obstruction may interfere with the free drainage of bile and of the contained bacilli. But there is little evidence that the continued presence of the bacilli within the liver of an immune carrier is harmful to the carrier himself. Further histological studies of the liver in enteric carriers are desirable.

SUMMARY

The autopsy findings are reported in a patient dying from paratyphoid B on the twenty-third day. Evidence is adduced to support the view that the focal necroses begin in clumps of macrophages and that the paratyphoid bacilli do not directly attack the parenchymatous cells of the organs. It is suggested that in the carrier state the presence of bacilli in the tissues is not directly harmful to the carrier.

My thanks are due to Dr. B. A. Peters, medical superintendent of Ham Green Fever Hospital, for use of the clinical notes and to Mr. T. J. H. Cooke for the photographs.

BACTERIOLOGY OF EPIDEMIC PARATYPHOID FEVER IN LIVERPOOL

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THE recent extensive outbreak of paratyphoid B fever in and around Liverpool has afforded a further opportunity of studying the value of examination of the fæces in the diagnosis of this disease and the rate of elimination of the infecting organism. Previous reports from this laboratory (Jones 1936, Glass and Wright 1937, Tabet 1938, Glass and Tabet 1938) have indicated that enrichment by incubation for 18–24 hours in tetrathionate broth followed by plating on a selective solid medium affords a method of laboratory diagnosis which is highly efficient and easy to apply. We have found it almost impossible to popularise among practitioners the well-tried and highly efficient method of blood-culture, and such specimens as have been submitted have often been unsatisfactory; but it has proved easy to obtain fæcal specimens, and as a result a relatively large number of cases have been examined in the first week of the disease and practitioners have more readily undertaken the investigation of family contacts. The remarkable selectivity of the method is also valuable in the detection of carriers during convalescence, and its ease of application enabled us to deal with several thousand specimens during this epidemic with a speed and certainty that would not have been possible by the older methods.

TECHNIQUE

Specimens of fæces were sent without diluent in sterile glass vessels or in new waxed cardboard containers which had not been sterilised. One local authority to whom these were not available used ordinary diphtheria swabs well steeped in the fæces. Immediately on receipt a large (5 mm.) loopful of solid, or 2–3 loopfuls of liquid, fæces were rubbed up in tetrathionate broth. If possible a loopful (5 mm.) of this suspension was immediately plated on one of the solid media; more often at the height of the epidemic this was omitted and the tetrathionate broth was incubated overnight and then subcultured to brilliant green eosin agar or Tabet's modification of the medium of Wilson and Blair (1931). On the following day suspicious colonies were identified by slide agglutination and subcultured for confirmation. For convalescents and carriers enrichment was invariably used. Specimens of urine were treated similarly, 1 c.cm. being added to 5–10 c.cm. of tetrathionate broth, incubated overnight and then plated on one of the selective media.

Tetrathionate broth was prepared by adding 10 c.cm. of a 60% solution of sodium thiosulphate and 5 c.cm. of a 30% solution of iodine in 25% potassium iodide to 90 c.cm. of broth (Wright 1933) containing 2·5% of chalk (Schafer 1934–35). It is important to add the thiosulphate before the iodine and advisable to sterilise the chalk in the broth. Experimentally we have found these concentrations highly suitable for *Bacterium paratyphosum B*, but for *Bact. typhosum* it is perhaps better to use a 50% solution of thiosulphate and a 25% solution of iodine (Muller 1923). The medium was dispensed in 5–10 c.cm. quantities in tubes measuring 6 in. by $\frac{5}{8}$ in. and stored at room temperature in the dark. Its selectivity appears to remain unaltered for a week and declines very little up to two weeks; thereafter it is less satisfactory. If the medium is stored in the refrigerator a precipitate may form. The optimum quantities of thiosulphate and iodine vary slightly with the basal medium used and selectivity seems to be better with slightly alkaline (pH 7·6) than with neutral or acid media. The amounts of thiosulphate mentioned are in large excess of the amount required to combine with the iodine present and should not be exceeded. They may perhaps with advantage be reduced.

Brilliant green eosin agar was prepared as described by Jones, though in the titration of batches of dye we have now found it advisable to fix the amount of eosin and vary the brilliant green. We have also found that certain batches of dye, particularly of eosin, are unsuitable.[1]

Tabet's medium (modified from that of Wilson and Blair) was prepared as described by him. We find it better not to use this medium on the day on which it is prepared, and to discard it after it begins to turn green. Usually it is perfectly satisfactory for at least a week. Some non-pathogenic organisms will grow in tetrathionate broth, and therefore it is advisable to use a selective solid medium for subculture.

DIAGNOSTIC CULTURES

In all, the laboratory was asked to help in the diagnosis of 481 cases. From 7 no fæces were received but the result of the Widal was quite conclusive. Of the remaining 474, 6 proved later not to be suffering from paratyphoid fever and specimens from 2 were not received until late in convalescence. There were thus 466 cases from whom specimens were received on one or more occasions in reasonable time. From 448 (96%) *Bact. paratyphosum B* was isolated from the fæces under such conditions as to confirm the diagnosis; 8 of the remaining 16 cases were subsequently proved elsewhere to be paratyphoid infections. In 7 others we isolated *Bact. paratyphosum B* from the urine or fæces late in the disease but under such conditions that we believe they came, not from the patient but from the receptacles into which the excreta were received. In the remaining case the Widal reaction was suggestive of an infection with *Bact. typhimurium*.

These results were satisfactory, but the positive cultures were not all obtained at the first attempt. In 439 cases confirmed by culture we have information of the approximate date of onset of the symptoms and of the day on which the fæces were examined (table I). In 402 of these 439 cases (92%) the fæcal culture was positive at the first attempt, in 32 (7%) at the second and in 5 (1%) at the third. In proved cases the percentage of positive cultures is high and similar in each of the first four weeks. This bears out our previous suggestion that the prevalent idea that the organisms are not so readily found in the fæces in the first week as later requires

4. MacCallum, W. G. A Text-book of Pathology, London, 1936, p. 587.

1. Satisfactory preparations are held in reserve by Imperial Chemical Industries Ltd.

revision. Of the 213 cases found positive in the second week, only 11 had been examined in the first. On the other hand, it was possible to diagnose 121 cases at the first attempt in the first week and one at the second. The number of cases in this series is large and justifies the conclusion that fæcal examination for the diagnosis of paratyphoid B fever should be undertaken as early as possible, and if not successful should be repeated at least twice within the next few days. We have no similar experience of typhoid or paratyphoid A fevers and we realise that *Bact. typhosum* at least is more fastidious; but we believe that the results in these might not be dissimilar. If these methods fail the Widal test remains available, at least in the uninoculated person.

In a number of our cases, especially from the urine of female patients, we have isolated *Bact. paratyphosum B* late in the course of the disease after a series of negative cultures. Bumke (1925–26) refers to such occurrences and we have had similar experiences previously (Glass and Wright 1937). Bumke regards this late appearance of organisms and their irregular occurrence as a genuine feature of certain cases. At first we thought this might be so, but our present view is that such findings are often due to contamination of excreta arising from inadequately sterilised receptacles or some other source not always easy to trace. If fæcal cultures are to be relied on the collection of specimens must be entrusted only to instructed persons who appreciate the dangers.

TABLE I—RESULTS OF FÆCAL EXAMINATIONS IN THE FIRST 6 WEEKS OF PARATYPHOID B FEVER

Week	Cultures +	Culture − but later +	Cultures + (%)
1	122	15	89
2	213	22	91
3	68	2	97
4	24	3	89
5	9	0	..
6	3	0	..
Total ..	439	42	..

This epidemic was very mild, 6 deaths in all being reported in about 500 cases; only 2 of these occurred in patients who were not suffering from some other disease as well. Many patients suffered from little more than a mild enteritis and might well have been ambulant, yet the organism was easily found. In a certain confectionery and bakery suspected of disseminating the infection it was necessary to examine some 200 employees in the course of a search for carriers and ambulant cases. The serum was examined for agglutinins for *Bact. paratyphosum B*, H and O, and for the salmonella group. From 53 persons whose serum agglutinated one or other of these suspensions at or above a dilution of 1 in 25, one or more, usually two, specimens of fæces were examined. *Bact. paratyphosum B* was isolated from 10 of these employees; only 2 of them were at the time considered sufficiently ill to be confined to bed. No chronic carrier was found and none of these persons became a chronic carrier. Any part played by this firm in distributing infection may well have been due to unrecognised and ambulant cases and to temporary carriers who became infected early in the epidemic and happened to be so employed as to disseminate infection easily. This sort of history has characterised many recent epidemics of paratyphoid B fever and it emphasises the importance of adequate study of sporadic cases and of the search for ambulant cases in contact with them. It also brings out the importance of the hygienic conditions in such establishments. Paratyphoid bacilli were isolated from two samples of synthetic cream.

DURATION OF INFECTION IN THE EXCRETA

We have previously reported our findings on the persistence of fæcal infection in 98 cases of paratyphoid B fever (Glass and Wright 1937). In a recent epidemic in Bristol, Davies and his colleagues (1940) found that the rate of clearance was much quicker. In the present study it was not possible to arrange for the weekly examination of all patients. Specimens were sent in as clinical considerations demanded, and often very irregularly. We have recorded all findings and determined the latest day of the disease on which the organism was found in the fæces before three successive negatives, assuming that clearing occurred in the following week. The figures for the first three or four weeks may be highly erroneous, for once the diagnosis had been confirmed it was usual to allow three weeks to elapse before submitting other specimens; those for the fourth and subsequent weeks are probably more accurate. The large numbers have permitted us to consider the effect of age and sex on the rate of clearing (table II).

TABLE II—RATE OF DISAPPEARANCE OF *Bact. paratyphosum B* FROM THE FÆCES

Week of disease	Percentage still excreting *Bact. paratyphosum B* in fæces									
	Whole series (339)	M (138)	F (201)	M under 20 (121)	F under 20 (126)	F 20 and over (75)	Treated (40)	Controls untreated (48)	Liverpool 1937 (98)	Bristol 1940 (30)
1	100	100	100	100	100	100	100	100	..*	83
2	92	88	94	88	96	91	93	97	100	93
3	81	78	84	77	86	79	93	88	93	64
4	73	65	78	64	78	77	85	78	88	46
5	61	54	66	51	68	61	65	74	84	22
6	44	39	47	38	48	47	40	53	67	7
7	31	27	33	26	31	37	30	36	49	7
8	22	20	23	19	18	32	28	27	33	..
9	15	14	15	14	8	31	20	17	19	..
10	10	8	11	7	4	23	10	11	15	..
11	9	7	10	7	4	20	10	11	9	..
12	7	4	9	3	2	20	5	6	7	..
13–16	6	2	8	2	2	19	2·5	6	..	..
over 16	5	1	7	0	2	17	0	6	4	..

Total cases in each group are shown in parentheses.
Males (M) 20 years and over (17 cases) not tabulated separately; 1 still + after 16 weeks.
* Only 6 cases examined in first week.

The rate of clearance is distinctly faster for our whole series than that of the 1937 epidemic but not nearly so fast as that of the Bristol series. Possibly the rate is associated with the severity of the epidemic, but this is mere conjecture. In 1937 the case fatality was 9% (Frazer et al. 1937) whereas in this epidemic it was about 1%. A large series such as ours is more likely to give correct figures than the smaller series of 1937. The clearance rate is a little slower for females than for males and the rate for females under 20 a little slower initially than that for males under 20, the numbers in each group being sensibly the same. The females of 20 years and over provided much the slowest rate of all. Even after 16 weeks, 17% of the 75 cases were still excreting paratyphoid bacilli in the fæces (table III).

TABLE III—AGE- AND SEX-DISTRIBUTION OF PROLONGED EXCRETORS OF PARATYPHOID BACILLI

Age (years)	Males		Females	
	Cases	Fæces + at 16 weeks	Cases	Fæces + at 16 weeks
Under 20 ..	121	0	126	2
,, 20–29 ..	7	0	37	2
,, 30–39 ..	5	0	12	2
40 and over	5	1	26	9
All ages ..	138	1	201	15

Only one male (aged 52) still continued to excrete paratyphoid bacilli in the fæces after 16 weeks, as against 15 females, but the small number of males in the higher age-groups forbids any direct conclusions. Of the females, 2 were little girls of 3 and 6 years; the remainder were married women, 9 of them 40 or more years of age out of 26 infected. The ages of these 9 patients were 41 (2), 46 (2), 47, 50 (2), 51 and 53 years. In the 18th week one woman, aged 32, ceased to excrete the organisms; the remainder are still under observation. In our previous series 4 patients were still excretors after 15 weeks, but later 3 of them cleared up, the remaining one being still under observation nearly 5 years later as a chronic carrier. We hope to be able to follow our present cases for some time longer to see if any of them cease to excrete the organism later. Up to now there has been little evidence of real intermittency in the excretion but the period is not yet very long.

The treated cases (table II) were given appropriate doses of sulphanilylguanidine (Marshall et al. 1941,

Anderson and Cruickshank 1941) by Dr. P. B. Beeson, of the American Red Cross Harvard Field Hospital Unit. There is little evidence that this had much influence on the rate of clearing. The presence of 3 long-continued excretors in the untreated group may well have been fortuitous.

We have not recorded our observations on the urine, largely because we felt that many of them were invalidated by contamination from receptacles. In the whole series prolonged excretion in the urine was very uncommon. No persistent excretor now remains under observation though one young man of 19 did not cease to excrete until the 17th week, his fæces having become negative in the 6th week. So far as we could determine, therefore, no patient became a chronic urinary carrier.

DISCUSSION

In our previous paper (Glass and Wright 1937) we were unable, owing to the paucity of specimens, to decide if examination of the fæces was as valuable in the first week of paratyphoid B fever as in the later weeks. Allowing for the uncertainty which naturally attaches to the date of onset in this disease, our experience confirms the view that examination of the fæces by the enrichment method recommended is of great value at all stages of the disease. The most valuable part of the technique is, we believe, the use of tetrathionate broth, which is very easy to prepare, but the special plates are an additional help, and Tabet's medium is probably the simpler to make. The method is equally applicable to the search for other salmonellas and for typhoid, but not to the diagnosis of dysentery. As a routine technique we recommend examination of the fæces as early as possible in the disease, with or without blood-culture ; if the first attempt at fæcal culture fails another should be made at once, and if necessary a third. With this technique we think that few cases will be overlooked and many unsuspected infections will be detected, especially among contacts. The delicacy of the method makes it essential that the greatest care should be exercised in the sterilisation of receptacles used for collecting specimens. In the home this may not be easy, and error may arise through a number of persons using the same receptacle for defæcation. We have found it helpful to give to each person a wide-mouthed screw-topped grease-proof cardboard tumbler into which he can defæcate directly.

The observations on the rate of clearing up of the infection in the intestine largely confirm and partly modify our earlier conclusions. The high incidence of prolonged infection of the fæces in married women, especially in those over 40, is well illustrated. It is early yet to speak of chronic carriers, but one aftermath of this epidemic is that we are likely soon to have liberated in the community a number of persons whose fæces, after periods ranging from 16 to 23 weeks, are still heavily infected with paratyphoid bacilli, an event which it will be interesting to follow as opportunity offers.

The epidemic of which these patients formed part was a very extensive one on both sides of the Mersey. Of its ultimate origin we are still uncertain, but its great extent appears to have been due to contamination of synthetic cream. We regard this contamination as an accident in the history of one or more persons who became infected in the early days of the epidemic, and whose occupation permitted them to infect 8 or more other persons in the same place of employment who again may have contributed their quota to the final result ; 2 of these early cases when detected were ill at home with conditions which were labelled gastritis but were actually paratyphoid ; the other infected employees were detected while still at work. These facts emphasise the importance of bacteriological examination of even mild intestinal disturbances and of the search for carriers, temporary or chronic, and ambulant cases in the environment of established sporadic cases of enteric fever. It is clear too that the hygiene of the large bakery establishment requires most careful supervision, for such establishments have been concerned in the dissemination of infection in a number of recent paratyphoid epidemics.

SUMMARY

The value of fæcal cultures in the diagnosis of paratyphoid fever has again been demonstrated in a group of 466 cases, 96% of which were confirmed in this way.

The method was applicable at all stages of the infection, including the first week. In 402 out of 439 cases (92%) cultures were obtained at the first attempt, in 32 (7%) at the second and in 5 (1%) at the third.

The rate of clearing of fæcal infection was found to be particularly slow in women over 20 years of age. Of 26 women over 40 years, 9 continued to excrete paratyphoid bacilli in the fæces for more than 16 weeks.

Attention is drawn to the importance of ambulant and unrecognised cases in the spread of infection and to the great importance of hygienic measures in the baking industry in relation to paratyphoid epidemics.

We wish to thank practitioners and hospital medical officers who supplied us with information about their cases ; our assistants, Mr. W. A. Smith and Mr. G. H. Kneale for their help with a large number of cultures ; Dr. B. T. J. Glover, who placed his records of the epidemic at our disposal ; and Dr. P. B. Beeson for permission to use the figures relating to the cases treated with sulphanilylguanidine and the control group.

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STAPHYLOCOCCAL SEPTICÆMIA

RECOVERY WITH SULPHATHIAZOLE

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PERIODICALLY reports appear of isolated cases of staphylococcal septicæmia successfully treated. We believe that such reports would be more valuable if they always contained an attempt at a quantitative estimate of the concentration of staphylococci present in the blood-stream. We have made such an estimate and compared our findings with those previously recorded.

CASE-HISTORY

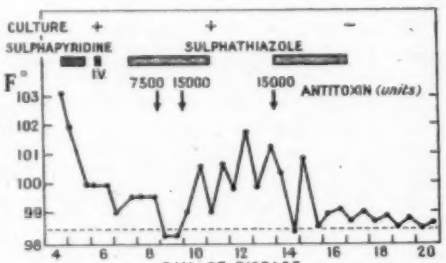
A man, aged 24, was admitted to hospital on Jan. 1, 1941. On Dec. 28 he had squeezed a pimple on his upper lip. Next day the pimple was worse and on the 30th he paraded sick before his medical officer. When first seen at hospital, on the evening of Jan. 1, four days after he had first noticed the pimple, he complained of severe pain behind the eyes and of feeling extremely ill. He had a carbuncle involving the upper lip and spreading on to the nasal septum. The surrounding tissues were red and indurated. His temperature was 103° F. and his pulse-rate 120. He was put to bed, magnesium sulphate paste was applied locally and sulphapyridine, 4 g. in the first 12 hours, was given by mouth. At the end of 24 hours his general condition seemed worse though his temperature was falling. The whole of his face was now œdematous. His eyelids were swollen and closed, their superficial veins distended and turgid. The sulphapyridine was being tolerated badly ; he complained of nausea and was cyanosed and vomiting. Intravenous administration of 2 g. of sulphapyridine was tolerated no better and we were forced to abandon its use. On the 6th day of illness (48 hours after admission) he complained of pain in the stomach and of persistent severe headache. His face was more swollen, there was complete ptosis of both eyelids with thrombosis of the superficial veins of the left eyelid but no demonstrable proptosis. He was coughing up purulent blood-stained sputum and his pulse was rapid and poor in quality. A radiogram taken later confirmed the presence of pneumonia at the right base. A swab taken from the carbuncle on the nose produced a pure growth of a hæmolytic *Staphylococcus aureus* which gave a positive coagulase reaction. The predominant organism in the sputum was a staphylococcus having the same properties. A culture of the patient's blood taken on the 6th day also grew coagulase-positive hæmolytic

Staph. aureus. Two plates were prepared each consisting of 1 ml. of the patient's blood mixed with 9 ml. of agar. These were incubated at 37° C. for 24 hours. Hæmolytic staphylococci grew on both plates and the average of the total number of colonies on each plate was equivalent to 110 colonies to 1 ml. of blood.

The site and spread of the primary lesion made any form of surgical intervention unwise, but the gravity of the patient's condition demanded some energetic treatment if there was to be any hope of recovery. Recently we had had success in the treatment of gas gangrene, where surgical treatment had been deemed unwise, with sulphapyridine and antitoxin combined. A comparable treatment was therefore adopted using sulphathiazole combined with staphylococcal antitoxin (fig. 1).

A blood-count on the 7th day showed 14,000 white cells per c.mm. with 87% of polymorphs. The local application of magnesium sulphate was stopped and instead the whole area of inflammation was painted 4-hourly with 1% acriflavine. Sulphathiazole was started that day and 12·5 g. was given in the next 72 hours, that being the total quantity available at that time; 7500 units of staphylococcal antitoxin was given intramuscularly after 24 hours and a further 15,000 units after 48 hours. At the end of this initial course the patient was slightly better; his temperature had fallen and he had tolerated the sulphathiazole well, in contrast to his reaction to sulphapyridine. A blood-culture on the 10th day was still positive but now grew the equivalent of 2 colonies to 1 ml. The concentration of sulphathiazole in the blood was then 4·7 ± 0·2 mg. per 100 ml. of whole blood. All general treatment was stopped on the 11th day excepting the maintenance of a high fluid intake and the administration of cod-liver oil. On the 13th day the temperature had risen again and a second course of sulphathiazole was started; 15,000 units of staphylococcal antitoxin was given followed by 12·5 g. of sulphathiazole in the next 72 hours. The blood-culture was sterile on the 17th day and the sulphathiazole concentration in the blood was 5·4 ± 0·2 mg. per 100 ml. of whole blood. At the end of the second course his general condition had much improved and his temperature had fallen to normal.

1



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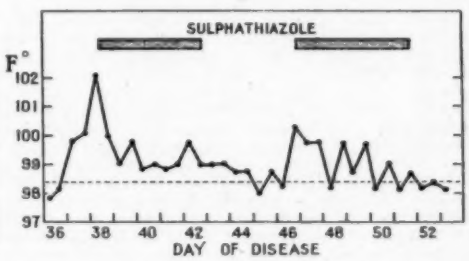

Sulphathiazole and antitoxin were stopped. He continued to make steady progress. From being semicomatose he was now mentally alert, the facial swelling was diminishing and the eyelids were less puffy. There was persisting ptosis of the left eyelid and the left pupil reacted more sluggishly than the right. He was complaining of some pain in the left shoulder, and on the 21st day (4 days after stopping the sulphathiazole) there was a sharp rise in temperature to 101° F. Swelling and redness were visible over the left shoulder-joint with limitation of movement. The leucocyte-count on that day was 20,000. Pain was relieved by the local application of 'Antiphlogistine' and immobilisation of the joint. There was improvement the next day and within 4 days the shoulder had recovered without other treatment.

The ptosis of the left eyelid persisted and it was about this time that we first demonstrated definitely a slight weakness of the external and superior rectus muscles of the left eye. There was also diminution in sensation over the areas of distribution of the first and second branches of the fifth nerve on the left side. His general condition, however, had improved so much that on the 34th day he was allowed to sit up in a chair for a short while, but on returning to bed he complained of a slight headache. By the 37th day this had become intense and was accompanied by vomiting unrelated to food. There was a fresh rise in temperature to 102° F. and all the symptoms of meningitis—drowsiness, photophobia, nuchal rigidity, a positive Kernig's sign, increased knee-jerks, and a double extensor plantar response. In addition the external rectus of the left eye was completely paralysed, there was some weakness of the superior rectus and ptosis on the same side. There was no papilloedema and no gross venous choking of either disc. The left pupil reacted more sluggishly than the right and there was still lack of sensation over the facial area supplied by the first and second divisions of the left fifth nerve. No other cranial nerve palsies could be detected. A radiogram of the skull demonstrated no abnormality. Lumbar puncture: pressure over 360 mm.; fluid deep yellow and turbid; 1800 cells per c.mm. (polymorphs 87%, lymphocytes 13%); protein 220 mg., sugar 20 mg., and chlorides 630 mg. per 100 ml. After 24 hours culture there were two colonies of coagulase-negative staphylococci on a blood plate inoculated with 0·5 ml. of cerebrospinal fluid. At the time it was thought that these might be contaminants, though controls were sterile.

As the infection had obviously broken out again and had apparently spread to a fresh region, sulphathiazole was again administered in two courses each of 12·5 g. with an intervening 3-day period of rest from the drug. After this the patient showed great improvement, the temperature subsided and the symptoms of meningitis abated (fig. 2). The findings of a second lumbar puncture done 7 days after the first were: pressure 300 mm.; fluid pale yellow and turbid; 290 cells per c.mm. (polymorphs 68%, lymphocytes 32%); protein 280 mg., sugar 40 mg., chlorides 610 mg. per 100 ml.; culture sterile; no organisms seen in stained smear of deposit.

From the 50th day onward he made an uninterrupted recovery. The rectus palsy of the left eye and the ptosis of the left eyelid persisted. The distress of the diplopia forced him to wear an eyeshield. The diminution of sensation over the first and second branches of the fifth nerve was still present but no other abnormal neurological signs could be demonstrated. The headache had disappeared by the 60th day and he was alert and vigorous, mentally and physically. He was discharged to convalescence and when re-examined on April 8, 101 days after the start of the infection, he had gained 20 lb. and there was definite improvement in the paralysis of the muscles of the left eye. Last seen 176 days from the onset of infection he was feeling well; the paralysis of the eye muscles had almost completely recovered though he still saw double on looking to the extreme left or upward and to the left. The left pupil was still slightly smaller than the right but the fifth-nerve lesion could no longer be demonstrated.

DISCUSSION

The signs seemed to suggest either a partial mural thrombosis of the cavernous sinus or periostitis with inflammatory œdema in the region of the sphenoidal fissure. The observed time—160 days—taken for recovery of the nerve palsies may be helpful in following up similar cases.

Isolated reports are of little value in the assessment of treatment unless there is some quantitative objective standard by which the severity of the infection can be judged and by which the patient's chance of survival without treatment or with alternative treatment may be assessed. Such a standard is not always possible. In this report we have attempted a rough quantitative assessment based on the number of colonies grown from 1 ml. of blood mixed with 9 ml. of agar and incubated at 37° C. for 24 hours. Butler (1940a), in a study of acute hæmatogeneous staphylococcal osteomyelitis, used a similar assessment. It is clear that such random sampling must be open to errors since counts probably fluctuate from day to day if not from hour to hour. Nevertheless he observed that if the numbers exceed 50 per 1 ml. the prognosis was grave. In cases where the

number had at any time exceeded 100 per ml. death occurred in all but 2 in each of which the primary focus was so placed that it could be excised completely. Our patient had a concentration of 110 colonies per ml. There was no possibility of excising the primary focus. If we accept Butler's experience as a measure, it seems reasonable to assume therefore that the treatment helped to save his life.

The sulphathiazole and antitoxin were used in the first course of treatment because of the success we had had in the treatment of proved *Clostridium welchii* infections, using sulphapyridine and antitoxin. The reports of Fenton and Hodgkiss (1938), Maxwell (1938), Corner (1940), and Butler (1940b) do not show that sulphathiazole is more effective in the treatment of staphylococcal infections than sulphapyridine, though some of these reports do not contain quantitative data for comparison. We used sulphathiazole because sulphapyridine was not tolerated and because the patient's condition was deteriorating rapidly while it was used.

As is traditional in dealing with infections of the upper lip we reduced local interference to a minimum. Careful and continuous nursing with the maintenance of a high fluid intake were not neglected.

We are grateful to Colonel R. A. Anderson, officer commanding the general hospital, and to Brigadier E. C. Beddows for permission to publish this case.

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NORMOBLASTIC CRISES AFTER AIR-RAID INJURY

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IN patients who have suffered severe blood loss, of the order of a litre or more, a profound degree of anæmia may be expected on restoration of the blood-volume; hæmoglobin values of 40% (Haldane) with 2·5 millions of red-blood cells per c.mm. are not uncommon among survivors. Schiødt [1] has shown that restoration of the blood picture to normal takes approximately 30 days. During recovery nucleated red cells may be found in the peripheral blood. In three seriously wounded air-raid casualties, a shower of normoblasts and reticulocytes was found 7 days after the injury. This "shower" lasted only a day and clinical and hæmatological recovery rapidly followed. Seriously infected cases do not show this reaction unless the infection is rapidly terminated—for example, a reticulocytosis of 6·8% was seen 10 days after amputation for gas-gangrene.

CASE 1.—A girl of 19, injured on Nov. 19, 1940. She had a compound fracture of the right elbow, amputation of the right foot, and other lacerations. She received plasma and 720 c.cm. of blood. On Nov. 26 the blood-count showed Hb. 40% (Haldane); red cells 1,920,000 per c.mm.; white cells 15,400 per c.mm.; polymorphs 12,782 (83%), lymphocytes 1540 (10%), monocytes 924 (6%), eosinophils 154 (1%); the red cells showed a macrocytosis, with much polychromasia. Hæmoglobinised normoblasts 3 per 100 white cells; normoblasts 8 per 100 white cells. No reticulocyte count was done. Next day only an occasional normoblast was found; reticulocytes 3%. On Dec. 3, Hb. 48%, red cells 2,110,000 per c.mm. In this case, the blood crisis occurred a week after injury.

CASE 2.—A woman of 30, injured on April 16, 1941. The injuries included compound fractures of the right femur and right humerus, simple fractures of the left tibia and the pelvis with intraperitoneal rupture of the bladder. She received serum and 540 c.cm. of blood. On April 24 the blood-count was Hb. 50%; red cells 2,470,000 per c.mm.; white cells 20,900 per c.mm.; polymorphs 19,646 (94%), lymphocytes 627 (3%), monocytes 209 (1%), eosinophils 418 (2%); normoblasts 2 per 100 white cells, reticulocytes 4·8%; some anisocytosis and much polychromasia were seen. This case was complicated by "traumatic nephritis."

1. Schiødt, E. *Amer. J. med. Sci.* 1937, **193**, 313.

CASE 3.—A man of 28, injured on April 17, 1941. The injuries included a simple fracture of the right tibia and bilateral perforating wounds of the anterior triangles of the neck. On April 24 a blood-count showed Hb. 48%; red cells 2,350,000 per c.mm.; white cells 16,000 per c.mm.; polymorphs 11,840 (74%), lymphocytes 2080 (13%), monocytes 1600 (10%), eosinophils 480 (3%); an occasional myelocyte, plasma cell, and normoblast were found in the blood film; reticulocytes 2·2%. Next day no normoblasts were found in the film on prolonged search. Reticulocytes less than 1%.

As a contrast to these three the following case is of interest.

CASE 4.—A man of 35, injured on May 11, 1941. The injuries included a subthoracic rupture of the left kidney and descending colon by a metallic fragment entering from behind. Nephrectomy was performed 2½ hours after wounding and colostomy 12 hours after wounding. Serum and 540 c.cm. of blood were given. He rapidly developed "traumatic nephritis." The blood-count of May 18 was Hb. 48%; white cells 12,400 per c.mm.; polymorphs 10,788 (87%), lymphocytes 1240 (10%), monocytes 372 (3%); no normoblasts seen; reticulocytes less than 2%. No red-cell count was done. On the 20th the blood-count showed Hb. 48%; red cells 2,000,000 per c.mm.; white cells 12,200 per c.mm.; polymorphs 10,980 (90%), lymphocytes 976 (8%), monocytes 244 (2%); no normoblasts seen; reticulocytes less than 2%. At this time the renal failure ceased, and a pleural effusion, at first free from organisms but later purulent and containing gram-negative bacilli (not culturable), developed. Blood-count on May 31 showed Hb. 43%; red cells 2,140,000 per c.mm.; white cells 9100 per c.mm.; polymorphs 8917 (87%), lymphocytes 1001 (11%), monocytes 91 (1%), eosinophils 91 (1%); reticulocytes less than 2%; no normoblasts seen. He improved rapidly after rib-resection and drainage on June 9. On June 24 Hb. 52%. On July 21, Hb. 73%; red cells 4,330,000 per c.mm. Here recovery was complicated by gross sepsis and blood regeneration was much delayed.

All these cases made a good recovery. The conclusions that can be drawn from them are: that (1) normoblastic crises may be found after severe injury; (2) that they are not found in cases complicated by severe sepsis; and (3) that their appearance is of good prognostic significance.

My thanks are due to Mr. G. H. Macnab and Dr. C. J. Gavey for permission to abstract from the notes of patients under their care.

PANCREATIC FISTULA IMPLANTED INTO THE STOMACH

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ON Jan. 25, 1940, an obese man of 49 was admitted into King's College Hospital in extremis. Eight days previously he had received a severe blow over the lower part of the chest, and he had suffered violent abdominal pain the next day, with one attack of vomiting. The pain increased in severity as the days passed, and though there had been no recurrence of the sickness he had been unable to take anything by mouth. The bowel had acted freely, assisted by enemata.

On admission the pulse-rate was 130 and the temperature 99° F. The skin was dusky and the patient was unable to give an accurate account of his immediate past history. The abdomen was distended, and an ill-defined mass, dull to percussion, was felt in the epigastrium, reaching from the liver—and apparently continuous with it—to a point below the umbilicus. No exact diagnosis was made, and an immediate exploration was decided on.

First operation.—On Jan. 25, under local anæsthesia, a 2 in. incision was made through the upper part of the linea alba, and continued through abundant and œdematous extraperitoneal fat. The peritoneum was opened through a small incision, and a blunt dissector pushed forward into a fat-covered mass. Immediately there was a rush of old, dark blood, which had been under tension and which poured from the wound in enormous quantities. My notes say about 3 pints in all—but this was a pure guess. When bleeding stopped, a large-bore drainage-tube was put down into a big cavity and the wound closed with two stitches taking in all layers.

The case excited much comment at the time—it was reminiscent of the fictitious operation in Cronin's "The Citadel." My own view then was that I had stumbled into a traumatic hæmorrhagic pancreatitis from which the patient had recovered sufficiently to enable him to localise the resulting necrosis. Subsequent events showed this to be correct. He was extremely ill at operation, and the temptation to explore the abdomen to satisfy my intense curiosity had to be resisted. An unexpected good recovery followed. In the 24 hours after operation 1050 c.cm. of urine was collected which showed a diastase index within normal limits (10 Wohlgemuth).

Three weeks later the patient was transferred to a sector hospital. At the lower end of the small operation wound was the mouth of a large sinus, discharging sanious fluid containing a considerable amount of diastase, and surrounded by excoriated skin. Sporing organisms of the *Bacillus subtilis* group were recovered from it.

Two months later he returned to King's College Hospital. He was up and about, and felt well except for attacks of epigastric pain with flatulence, but he had lost much weight. The sinus had persisted, and discharged about 12 oz. of clear fluid daily, which necessitated wearing a Hamilton Irving suprapubic box. The discharge contained a high percentage of diastase (more than 2000 units per c.cm.) and a scant growth of *Staphylococcus albus* and *B. coli* was obtained from it. The gastric residuum, which contained blood, showed no free acid but a brisk response to histamine. The stools contained a small amount of undigested muscle-fibres and starch granules and an excess of unsplit fat. X ray of the gall-bladder showed a normal emptying rate, and a barium meal showed no abnormality of the stomach. X ray of the sinus after lipiodal injection showed a long tortuous track leading to the left and passing beneath the fundus of the stomach. The condition was therefore an established pancreatic fistula opening from the left side of the body of the pancreas.

Second operation.—On April 3, under gas-oxygen-ether (Dr. F. Cartwright), the sinus was first filled with paraffin wax, and, with a peroral margin of skin, dissected towards its origin from the pancreas. The track proved to be a well-defined tube some 4½ in. long; it ended near the tail of the pancreas, which was hard and swollen like a cricket ball. Adhesions were dense and universal, and the dissection took some time but was helped by the presence of the paraffin wax. Excision of the track appeared out of the question, and a fistulo-gastrostomy was performed. Ether was injected into the sinus to dissolve the wax, which shot out in pellets as the ether boiled in the lumen. An incision was made in the anterior wall of the stomach, and the skin surrounding the mouth of the fistula sewn to the mucosa of the stomach with interrupted sutures of catgut. A stab drain was put down to the site of the anastomosis and the abdomen closed in layers. Convalescence was uneventful. During the operation a collection of pultaceous material was found in the retroperitoneal fat, and pathological investigation showed this to have resulted from fat necrosis.

Gastroscopy.—On June 27 the patient returned to King's College Hospital at my request for gastroscopy. He was well and had regained his weight (to an altogether unnecessary extent, I thought, for he was normally an obese man). He complained of no discomfort or pain; his appetite was good and he did not diet. His bowel action was regular. The gastric residuum contained bile, mucus and starch; the volume was 120 c.cm., and there was 4 c.cm. N/10 free hydrochloric acid %. No diastase was present. Nothing abnormal was found in an examination of the stools. I was extremely eager to examine the site of anastomosis with the gastroscope, and had remembered at the second operation to place the fistula where I knew it would come into the visual field. I found the opening with some difficulty; it looked rather like an œdematous ureteric orifice. Around it the gastric mucosa appeared to be atrophic. There was no sign whatsoever of the skin which had originally surrounded the fistula. It had been replaced entirely by gastric epithelium.

In a letter dated Nov. 11, 1940, the patient glories in his good health. He works hard in his office, rising at 7 A.M. and retiring to bed between 9 and 10 P.M. His appetite is good—he eats all he can get.

COMMENTARY

Chapman [1] has recently described a case in which a pancreatic fistula resulting from marsupialisation of a very large pancreatic cyst was successfully implanted into the jejunum, and raises the question whether anastomosis to the duodenum or jejunum is not superior to anastomosis with the stomach, owing to destruction of the pancreatic ferments by the gastric secretion after the latter operation. In my own case it seemed that most of the pancreas was functioning and excreting normally, and that only a small part of it—towards the tail—was drained by the fistula. The loss of such ferments as were produced by this portion as a result of interaction with the gastric secretion would probably be insufficient to affect the digestive functions materially.

1. Chapman, C. L. G. *Brit. J. Surg.* 1941, **28**, 633.

FOREIGN BODIES IN THE AIR-PASSAGES

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THE maxim that "the customer is always right" may be accepted in the best business circles; it is not endorsed by the medical profession, probably because clinical practice has proved that it is unwise to accept any statement from a patient which cannot be confirmed by further examination of his history, physical signs or radiological and pathological reports. Nevertheless, in cases where physical signs are slight or absent, it is equally unwise to discount the patient's history, particularly when dealing with uncommon conditions.

The aspiration of a foreign body into the tracheobronchial tree is a well-recognised accident, and the varied symptoms and pathological lesions which may result can be found in any textbook; but in this country it is a comparatively uncommon condition and English doctors are thus much less "foreign-bodyminded" than their colleagues in the United States, where the chewing habit makes the accident much commoner. The following 4 cases show how hesitatingly the patient's unconfirmed word is accepted.

CASE-RECORDS

CASE 1.—A woman of 53 gave her own doctor a history of having had an attack of dry pleurisy in 1936; a second attack in 1940; and a third attack in May, 1941. The temperature during this third illness had been in the region of 100° F. and her doctor found signs at the left base suggesting a partial pneumothorax. The X-ray report said "typical pneumonic consolidation." She was then given a course of sulphapyridine (M&B 693) but this had to be discontinued because of the nausea and general malaise induced. In spite of the X-ray report and the sulphapyridine, the condition of the base remained unchanged, and she was referred to one of us (B. G. E.) for opinion on June 30. As the door opened to admit her the horribly offensive odour of a lung abscess or bronchiectasis was perceptible. She repeated the history already given to her own doctor, adding, however, that she had had a cough for 12 months, had lost weight off and on for the same period, and that she had a poor appetite and recurrent indigestion. For the past 6 weeks she had had constant pain in her left side, made worse by coughing and breathing. She had not noticed any foul odour or taste in the phlegm, though she brought up great quantities. She denied having aspirated a foreign body.

She was a thin, nervous, apprehensive but intelligent woman, with moist skin, moist slightly coated tongue, some dyspnœa, a slight degree of cyanosis of lips and fingers, and early clubbing. Pulse-rate 86, temperature 97° F. Diminished movement over whole left hemithorax, especially at base. Percussion over upper chest, to the level of the 3rd rib in front and angle of scapula behind, gave a relaxed note; below these levels note much impaired but without the "feel" of fluid. Over the left upper lobe breath sounds were harsh, with prolonged expiration; at the base they were diminished, with diminished vocal resonance; at the angle of the scapula they were high-pitched and tubular, with increased vocal resonance, exquisite pectoriloquy and numerous coarse râles. Right lung showed prolonged expiration over upper zone, and emphysematous changes over the mid and lower zones. Heart displaced to left.

The case was diagnosed as bronchiectasis with pulmonary fibrotic induration and pulmonary atelectasis; but despite the negative history a note was made that the causative factor might be an inhaled foreign body. X-ray examination confirmed the clinical finding, and showed congestion of the upper

right lung field due to the mechanical obstruction offered to the passage of blood in the damaged left lung. Sputum contained large numbers of pneumococci and streptococci. Tubercle bacillus, actinomyces, or other fungi, were not found.

On July 7 she admitted under pressure that 10 years ago she "swallowed" a piece of bone when taking soup; a severe fit of coughing followed, and she immediately coughed up some blood. Alarmed, she consulted a doctor, who summarily dismissed the idea that she had inhaled the bone into her lungs. Finally she lost her symptoms, but from that time to the present she has been subject to "cold on her chest" and bronchitis, especially in damp and cold weather. During the 10 years since this occurrence she has consulted several doctors about her chest, and had endeavoured to get her tale listened to; but each had dismissed her theory that she had inhaled the piece of bone, and at last she resolved never again to mention it to any medical man. She was admitted to the London Chest Hospital under the care of one of us (H. V. M.). Bronchoscopy revealed no evidence of foreign body, but there was a mass of granulation tissue projecting into the lumen of the bronchus which was thought to be an old innocent tumour becoming malignant. Section showed no malignancy but much hyperplasia. Three days later she developed collapse of the right lower lobe. This suggested that a foreign body had been present in the left lower bronchus, and that during the severe coughing which occurred while her larynx was being painted for the bronchoscopy it might have been dislodged, coughed as far as the bifurcation and then aspirated into the right bronchus. A second bronchoscopy proved this to be the case: the piece of bone was successfully removed after its 10 years residence, and measured 1½ × 2 cm.

CASE 2.—The parents of a boy aged 6 years gave the following history. While eating peanuts the child suddenly choked, became dyspnœic and developed a croupy cough. He was rushed to a children's hospital where this history was given. A diagnosis of laryngeal diphtheria was made and the child was transferred to a fever hospital, where the history was again ignored and where he remained for six weeks, the diagnosis remaining doubtful, and he was then discharged. The croupy cough, the paroxysmal asphyxial attacks of dyspnœa persisted and the child was admitted to the London Chest Hospital. He had coarse rhonchi best heard over the central part of the chest in front. X ray negative. Bronchoscopy revealed a split peanut lying loose in the trachea and sliding up and down it with each respiratory movement. Removal of the nut produced a complete cure. The fact that the nut remained free in the trachea accounted for the paroxysmal asphyxial attacks of dyspnœa and the croupy cough, and also for the comparative absence of physical signs and damage to the lung tissue.

CASE 3.—The parents of a baby aged 2 years gave the following history. While he was sucking sweets he had a choking fit, followed by a croupy cough and dyspnœa. He was taken to a children's hospital; the history was given and a diagnosis of laryngeal diphtheria was made. The child was transferred to a fever hospital where he remained for 6 weeks, the diagnosis remaining doubtful. He was then discharged and brought to the London Chest Hospital. He was desperately ill, coughing up foul sputum; temperature 102°·5 F., pulse-rate 140 respirations 40–50. Physical and radiological findings left no doubt that the right lung was collapsed and suppurating. It seemed at first that a sweet aspirated into the tracheobronchial tree would have dissolved, and was therefore unlikely to be the cause of the patient's condition; and it seemed undesirable to bronchoscope such a sick infant on an off-chance. But it was remembered that sweets often contain nuts, and the mother thought the sweet in question was a sugared almond. Bronchoscopy showed an almond completely obstructing the right main bronchus. Owing to its long stay in the bronchus it was friable and could only be removed piecemeal. After its removal the child made some progress, but developed an empyema secondary to the pulmonary suppuration. After drainage of the empyema the child's condition improved.

CASE 4.—A man aged 35 came to the Miller General Hospital with the history that 3 days previously, when eating mutton stew, he had choked while a small bone was in his mouth; since then he had had a continual cough which had prevented him from sleeping. Physical and radiological examinations were negative. Since the bronchoscopic clinic at the London Chest Hospital had just been severely damaged by enemy action, and it was inconvenient to do a bronchoscopy elsewhere, the patient was given an expectorant mixture and told to report in a week unless anything untoward occurred. At the end of the week his condition was unchanged, and a bronchoscopy showed a mutton bone 1½ × 2¼ cm. lodged in the right main bronchus in such a position as not to cause any serious obstruction to the air entry; it had therefore produced no physical signs or damage to the lung tissue. Removal produced a complete cure.

These cases suggest that, even if ethically a patient cannot be considered to be a customer, at least he is sometimes right.

ADDITION OF GLUCOSE TO STORED BLOOD

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TECHNICIANS AT THE SOUTH-EASTERN BLOOD-SUPPLY DEPOT

IT was shown by Rous and Turner[1] that the addition of glucose to blood delayed progressive hæmolysis during storage. In its war memo No. 1 the M.R.C. Committee on traumatic shock modified the original method of Rous and Turner and recommended the addition of 20 c.cm. of 15% glucose to a mixture of 100 c.cm. of 3% sodium citrate solution and 420 c.cm. of blood. The addition of glucose, however, presents difficulties, for while glucose in water may be sterilised with little or no change in colour the autoclaving of glucose in citrate solution causes much caramelisation and subsequent discoloration of the blood plasma. For this reason it is necessary to sterilise the glucose solution separately and then mix it with citrate in a sterile bottle before or after the addition of blood. In either case, the glucose must be introduced by uncapping the bottle, or by injecting it with a sterile syringe, first through a perforated metal cap and then through a rubber washer. Both methods involve an extra manipulation of sterile material and so double the chances of infection, a consideration of special importance when the material is to be stored for some time before use. In order to overcome this difficulty the following method has been devised.

A stout hard glass test-tube (4 × ¾ in.) containing 6 c.cm. 50% glucose is carefully lowered into a M.R.C. pattern blood-bottle holding 120 c.cm. 2·5% sodium citrate. The bottle is then capped and autoclaved for 30 min. at 20 lb. pressure. In this way the glucose and citrate solutions are kept apart until sterilisation is complete. When the bottle and its contents are cool the glucose and citrate may be mixed by tilting and hardly any colour can be detected in the mixed solutions.

The 50% glucose solution is prepared as follows: A 5 litre Pyrex flask is taken and a mark is made on the neck corresponding to the 5500 c.cm. level. Glucose, 2750 g., is placed in the flask and freshly distilled boiling water added. The glucose slowly dissolves and when solution is complete water is added to the mark after cooling. The glucose solution is then placed in bulks of 500 c.cm. in M.R.C. pattern blood-bottles and autoclaved for 30 min. at 20 lb. pressure; 6 c.cm. of solution is run into a series of test-tubes by means of an automatic pipette. The test-tubes are lowered into the bottles containing the citrate solution, the caps screwed on tight, and the whole batch of bottles sterilised at once. Any glucose not used within two hours of the glucose bottle being opened is discarded.

If the glucose tube is of the correct dimensions the knack of mixing the glucose with the citrate may quickly be acquired and hundreds of bottles may be prepared rapidly. A tube which is too short is liable to capsize early in the operation, and caramelisation follows. If the tube is too long some of the glucose may remain in it and insufficient citrate may enter; under these conditions any blood entering the tube may clot. But when the details are accurately followed there is no clotting; in 800 bottles collected no clotting has been noted.

1. Rous, P. and Turner, J. R. *J. exp. Med.* 1916, **23**, 219.

DRASTIC REMEDY FOR THROMBOSIS.—Where clinical findings suggest thrombosis of the deep veins of the leg Jacob Fine and John B. Sears (*Ann. Surg.* 1941, **114**, 801) recommend division of the femoral vein below or above the profunda. They cite cases in which they believe a very real danger of pulmonary embolism has been avoided. Where minor non-fatal emboli have occurred they think that division of the main vein is the one effective measure that can be taken to avoid further emboli. Their patients showed no more disability from venous obstruction than was to be expected from the phlebitis alone.

Medical Societies

ROYAL SOCIETY OF MEDICINE

ON Jan. 17 there was a joint meeting of the sections of Neurology and Orthopædics which members of the sections of Medicine, Physical Medicine and Radiology were invited to attend. Colonel GEORGE RIDDOCH took the chair and a discussion on

Sciatic Pain

was opened by Dr. J. PURDON MARTIN. He said that the subject had become confused, partly owing to much new work in the last few years which had not been properly digested, and partly because of inexact terminology. By sciatic pain he meant pain referred to the course and distribution of the sciatic nerve. The cutaneous distribution of the nerve was limited to areas below the knee, but it gave motor and deep sensory innervation to the muscles at the back of the thigh, and to those of the back and outer side of the leg. The pain was typically a deep one and was felt in the muscles. There appeared to be tenderness along the course of the nerve, but it was doubtful whether this really indicated that the nerve was tender. The muscles were tender, and he had found that the muscles on the outer side of the leg might be tender when there was no tenderness of the common peroneal nerve at the neck of the fibula. He thought that the pain excited by extension of the limb was probably due to stretching of the hyperalgesic muscles. It had been attributed to stretching of the inflamed nerve, and even to adhesions; but in some cases of referred sciatic pain it could be abolished by anæsthetisation of the exciting focus, so that it could not be due to inflammation or adhesions. The causes of sciatic pain fell into two groups: disturbances affecting the nerve itself, or one of its roots, and causes producing pain referred to the distribution of the nerve from a focus that might or might not be within its territory. The referred pain was the commoner. Mackenzie's conception that referred pain was due to an irritable focus in the spinal cord had stood the test of time and had received support from Sherrington's demonstration of a "central excitatory state" affecting motor cells in the cord. The cells concerned with referred pain were those in the posterior horn of the grey matter and they formed a continuous column which was not segmented. Referred pain was not, strictly speaking, segmental, though it might be so with a moderate stimulus. All the structures within the affected territory were hyperalgesic. Referred pain could not impair function or abolish reflexes. The chief sources from which pain was referred into the sciatic distribution were from arthritis and periarthritis of the hip and lumbar spine. Malignant disease of the lumbar spine might cause sciatic pain at a time when no abnormality could be made out in the X-ray films, and as there was at that stage no impairment of the functions of the sciatic nerve the pain was probably referred from the diseased bone. The treatment of referred sciatic pain was to treat the primary focus. Harris was using the method of local injection in suitable cases 20 years ago, employing quinine urea, and later very small injections of alcohol, and in the last few years J. H. Kellgren, using procaine preparations, had made this method his own. Disturbances which might affect the nerve itself or its roots were many. The protruded nucleus of a broken intervertebral disc usually caused an irritation of a single root. This was undoubtedly the same as the "radicular sciatica" of Dejerine and others, and the exponents of protruded discs had not so far added anything to the symptoms described by Dejerine. We were still somewhat weak in the diagnosis of these cases. Like any other neurological problem, it could be divided into: "where is the lesion?" and "what is the lesion?" The distribution of the pain and any sensory or reflex impairment indicated which root was affected. For the answer to the second question we were dependent on signs elsewhere, special investigations and the history. The pain in the back was probably referred from the damaged disc or ligaments under stress. The simple X-ray appearances and the C.S.F. findings were not very helpful in differential diagnosis, and we had to use X-ray examination with contrast media, of which air was the best; 'Lipiodol' should not be used lightly. He believed we would eventually be able to diagnose these cases clinically when we got to know the syndrome caused by the lesion of the disc itself at whatever level, and in fact we might do it better than with contrast media, because there must be some cases in which no constriction of the theca was produced. Dr. Martin declared that a sciatic neuritis existed—an interstitial neuritis analogous to those which affected other nerves—though there was little recent pathological confirmation. Its signs were absence of the ankle-jerk and wasting of the calf muscles. Some patients had only one attack and others recovered in a few weeks. The outstanding symptom was pain, and there were signs of interference with the nerve function, but paralysis was unusual and generally associated with a gross lesion. The signs and symptoms were not localised to the distribution of a single root, but there were usually signs of more widespread inflammation. There was nearly always a point of tenderness below the iliac crest on the upper and outer part of the buttock.

Mr. V. H. ELLIS said that neurologists were now reaching a conception that in sciatica there was usually nothing much wrong with the great sciatic nerve trunk, nor was the pain referred to its cutaneous distribution. In theory, sciatic pain might arise within the nerve or its central connexion, or might be due to irritation of the nerve or its roots from outside, or to stimulation of nerve-endings of similar segmental distribution in other regions, from which the pain was referred to the sciatic area. Sciatic neuritis was extremely rare and he had never seen hyperæsthesia referred to the dorsum of the foot in sciatica, though the whole of the cutaneous distribution of the nerve ought to be affected by a neuritis of the main trunk. Irritation of the nerve or its roots might be caused not only by lesions of an intervertebral disc but also by an intraspinal tumour, subarachnoid adhesions and possibly by spinal osteophytes or tumours of the pelvis. Seddon had ascribed sciatic pain to tuberculous caries of the sacro-iliac joint. To produce pain in a nerve, movement was generally required as well as pressure; this fact might explain why sciatic pain was sometimes intermittent and why certain forms of treatment gave no relief. Rupture of an intervertebral disc suggested a severe traumatic strain on an intervertebral joint, and hypertrophy of the ligamentum subflavum suggested a similar ætiology. He doubted whether protrusion of the disc was always the only lesion present, and asked whether it might not be associated with a strain of an intervertebral joint. Movement was required to elicit pain when any of those three lesions was present. Sciatica could nearly always be relieved by immobilisation of the lumbar spine; fusion of the lumbar spine relieved symptoms caused by disc protrusion, but prolapse of the disc was not the only factor responsible for pain. Fusion after laminectomy gave better results, and Watson Jones recommended posterior root division as well as removal of the disc, which by itself seemed not always to produce a permanent cure. It therefore appeared that sciatica might be due to intervertebral strain, a wide class of injuries of which rupture of the disc might be merely a complication. In treatment, the lumbar spine might be immobilised by methods varying from rest in bed to fusion of the spine. Application of a plaster jacket in suspension, possibly prolonged into a short hip spica, would give relief even in a case of protruded disc, but not permanently. A protruded disc might be reduced by alteration in the position of the lumbar spine, but it was not likely that the ruptured fibrous ring would heal and fix it permanently in place. Spontaneous reduction, however, probably accounted for some of the remissions. He had brought about permanent relief in non-fibrositic cases by immobilisation and by simple traction on the affected limb with the patient recumbent. Manipulation of the spine sometimes gave relief but was dangerous unless a ruptured disc had been excluded.

Dr. F. A. ELLIOTT pointed out a gulf between orthopædic and neurological views on the cause of sciatic pain. He analysed an unselected group of 115 cases admitted to three emergency hospitals. Of these 84 had pain of true sciatic distribution; 16 were obvious cases of fibrositis. Interstitial neuritis, comparable to brachial neuritis, was present and obvious in 3, and was quite unlike any type of fibrositis; the ankle-jerk was absent

and recovery was very slow. Radiculitis was diagnosed in 2 young men who apparently had sciatic neuritis but whose cerebrospinal fluid had a protein content above 100 mg. With osteo-arthritis of the 4th and 5th lumbar vertebræ there was localised inflammation with gross lipping, and the question arose whether the high sciatica was caused in any way by the osteo-arthritis. If the root was anæsthetised in the canal the pain was completely relieved for 2–3 hours. Osteo-arthritis of the hip was diagnosed in 8 cases; the fact that pyogenic or tuberculous disease of the hip does not usually cause sciatic pain was a warning that osteo-arthritis here should not be accepted as the cause of a sciatica without more evidence. Sacro-iliac arthritis was difficult to diagnose because clinical signs were unreliable. Subacute arthritis of the sacro-iliac joint accounted for 5 cases in his series, Pott's disease for 4 or 5, and malignant secondaries for 4 or 5 more; 3 cases were due to tumours of the cauda equina, 2 to herniation of the nucleus pulposus, 1 to protrusion of an intervertebral disc; and 1 patient was a malingerer who had suffered from sciatica before and was reproducing his earlier symptoms. Sciatics of long standing tended to develop a neurosis which was either a hysteria or a true anxiety state due partly to long-standing pain and partly to long discussions round the bedside during which the patient began to realise that his doctors were not very sure what was the matter. An anxiety state did not indicate that the sciatica was spurious, but it was a definite complication.

Mr. JOE PENNYBACKER doubted whether significant advances would be made until Dr. Martin's definition was accepted. Diagnosis of protrusion of an intervertebral disc usually rested on the history, which began with a strain—as a rule a minor strain in flexion. The patient might be so obsessed with the sciatic pain that the cause was only revealed on direct inquiry. Diagnosis from neurological signs would vary with the diligence of the surgeon in seeking them. Love had reported neurological abnormalities in 85% of cases. One of the commonest signs, and one generally missed, was muscular weakness: when the power of dorsiflexion of the foot was tested against resistance, there was a definite weakness on the affected side, but complete sensory loss was rare; more commonly there was slight hypo-æsthesia, loss of the sense of tickling and slight impairment of response to pin-prick. Abnormalities of reflex varied. The cerebrospinal fluid was normal or had a slight increase of protein. Lipiodol had become somewhat dangerous because old stocks were now being used which contained relatively large amounts of free iodine. Most patients responded to rest, but if this could not be arranged for and the pain was not disabling, the sciatica could sometimes be relieved enough by an extension plaster jacket for the patient to return to work. Local injections were harmless, but their results were not very impressive. Operation should only be advised if response to rest and immobilisation was not satisfactory. Spinal manipulation might cause obstinate cauda-equinal paralysis. Further advances would come through orthopædists and neurologists seeing cases together and committing themselves in writing to a definite diagnosis and suggestions for treatment. It was necessary to know the reason why explorations had proved negative and to be sure that the lesion had not been missed. Proper follow-up, as yet rare, was essential.

The PRESIDENT observed that diagnosis was the crux of the matter and ought to precede any form of treatment. The profession should discard the notion that sciatica had a simple pathology, and he thought that to give it another name—such as posterior crural pain—might help. He confirmed the need for a really scientific clinical investigation by a team consisting of neurologists, orthopædists and physiotherapists, with a proper follow-up.

Dr. P. P. DALTON stressed the importance of the vegetative nervous system as the site of minute points of pain which would cause sciatica. The referred pain, he said, was often accompanied by other symptoms of neural disturbance, and in some cases vasomotor reflexes were excited when the painful point was injected. The pattern of the painful spots was similar to that of the underlying deep blood-vessels. Oozing of blood from the needle punctures was far more common than would be expected, which confirmed the belief that the spots lay in highly vascular areas—that was to say, in areas well supplied with vegetative nerve-fibres. The sensation of cold in the affected limb was due to vasoconstriction. He had produced pain or a sensation of extreme cold down the sole of the foot by injecting spots some two and a half inches deep lateral to the superior surface of the first lumbar vertebra; this result would be anatomically impossible if the path of the stimulus were along the cerebrospinal nervous system. Disturbance of the vegetative nervous system was the only pathological state which fitted all the facts, and was one of the commonest causes of sciatica and other reflex pains.

Mr. L. S. MICHAELIS suggested that local and acute cooling—for instance, by lying on a wet lawn between games of tennis—might be one cause of sciatica. He urged that before more drastic remedies were tried, the patient should be given analgesics and vitamin B and be encouraged to move as soon as possible.

Dr. JAMES CYRIAX said that 15% of all cases were due to adhesions affecting the sciatic nerve. The sciatic patient always had pain on some movement, and if pain could be shown to be due entirely to the stretching of the nerve structure, the nerve sheath was obviously involved. If the sheath alone were involved and epidermal injection could be given at once, the patient could then usually reach another 8 in. down his leg and the diagnosis was confirmed. If the improvement was transitory, clearly the condition was a sciatic perineuritis, but not of the sort that could be cured by local anæsthesia; there must, in fact, be a frictional cause, usually a protruding disc. This was present in about a tenth of the cases of diffuse pain felt down the thigh and in the leg. Diagnosis of protrusion of a disc could therefore be made purely on the response to local anæsthesia. The absence of signs other than loss of ankle-jerk and wasting of the glutei suggested a disc lesion, and weakness of dorsiflexion of the foot was typical of it. Most patients with pain down the leg, however, were suffering from referred pain which might come from any deep-seated structure proximal to the segments from the 4th lumbar to the 2nd sacral. Diagnosis could nearly always be made from observing what movement hurt. Local anæsthesia could be used to corroborate, and treatment was nearly always physiotherapy applied to the source of pain. The treatment of sciatic perineuritis was not physical, but consisted of local anæsthesia; a protruding disc should nearly always be removed.

Group-Captain C. P. SYMONDS said he had very little to retract from what he had said three years ago when Dr. J. G. Love had addressed the section. The syndrome in patients with proved protrusion of the disc appeared identical with that seen in scores of others who had recovered with rest and warmth alone. If prolapse of the disc had any substantial incidence, it must often be capable of spontaneous repair. He added, however, from later experience that in healthy young people prolapsed disc was by far the commonest cause of sciatica. Prolapsed disc could be diagnosed with considerable certainty if recurrent lumbago were followed by recurrent sciatica in a healthy young person. He was not prepared to advise operation in any case. If rest had been tried for a reasonable time and failed, the Service patient should be invalided out. Results of surgical intervention had been deplorably unsuccessful.

Dr. HENRY WILSON spoke of 80 cases of sciatica admitted to the London Hospital in the last 5 years. In no less than 25% the house-physician or registrar had noted a slightly abnormal mental attitude. He did not include the word "anxious," for any patient with serious sciatica might be anxious; nor had he included "exhausted." These reactions were probably frequent because of long inactivity; such patients ought to be given suitable employment for their upper limbs and their minds. Possibly pain which continued after 3 months was really hysterical in origin. If a patient did not react to ordinary treatment after a reasonable time, a psychiatrist might be called in to inquire whether an escape mechanism was prolonging the symptoms.—Major G. D. KERSLEY said that strict immobilisation should always be tried before operation was considered; for Service patients he would not consider operation at all.—Mr. HARVEY JACKSON declared that hernia of the nucleus pulposus had been given undue importance; by itself, it did not produce sciatica. He asked how long

would elapse between injury to the back and evidence of nuclear herniation. If the lesion could remain quiescent for 2 years, it was difficult to evaluate fixation. Clinical diagnosis was not possible; an impression only could be gained; accessory means were needed to make certain. The patient must be incapacitated from work before operation was justified. Nuclear hernia sometimes produced a neuritis and sometimes not. The ligamentum subflavum played no part in sciatic pain: intermittent strain always produced hypertrophy, which in this ligament was merely a result of the deformity.

Reviews of Books

Foundations of Neuropsychiatry

(2nd ed.) STANLEY COBB, M.D. London: Baillière, Tindall and Co. Pp. 231. 14*s*.

A RECENT controversy about the neurological approach to mental disorder showed how easily and vehemently the connexion between neural and psychological functions can be denied, or belittled, by those who are mindful of past crimes of omission and commission on both sides. In America they seem readier to accept the connexion, and Professor Cobb's book, now in its second edition, takes it for granted. By describing the present state of knowledge in the anatomy, physiology and pathology of the nervous system, he demonstrates that psychiatry can—indeed must—eat also at this table if it is not to become swollen with wind and rank mists. In his introductory chapter, Cobb recognises that the mental sciences are separated from their foundations in anatomy, physics, chemistry, physiology, neurology and experimental psychology by a gap in our knowledge that is at present filled by theories with little support in scientifically controlled observations. But he sees no reason for assuming that accurate controllable methods will never be applied to the observation of human behaviour: "it is because the science of psychiatry is young that it seems too complex for quantitative analysis."

The book is mainly, as in the previous edition, an exposition of the facts and correlations needed to understand the simpler workings of the central nervous system, whether in health or disease. Recent work is incorporated, and general principles made clear wherever possible. The chapters on the autonomic nervous system, the cerebral circulation, and epilepsy, have been largely rewritten, and a chapter on psychopathology added. This last is brief and schematic, and contains controversial statements such as that one must take schizophrenia and affective psychoses as fundamentally one—the "schizo-affective group." This is the least satisfactory chapter, because uncritical and misleadingly sketchy. The book as a whole, however, is ideal for introducing the medical student to the combined discipline; it gives him a sound basis for his further studies.

Science for the Prosecution

JULIUS GRANT, M.Sc., Ph.D., F.I.C. London: Chapman and Hall. Pp. 302. 15*s*.

A SUBJECT so new, so fluid, so various and so much hampered by the lack of an English journal as contemporary forensic science takes some presenting; but there has long been a space waiting on the shelf for Dr. Grant's book. He describes the forensic uses of chemical analysis, serology, and the forms of radiation—from X rays to the infrared—which may be harnessed by means of the camera, the microscope, the spectroscope, or the naked eye; and in a final chapter he discusses the psychological examination and treatment of the offender. Thus he has certainly covered the ground, though he might have opened up a little more about the comparison microscope, the use of oblique illumination in deciphering impressions of writing, and about ways of restoring erased markings to materials other than paper. The arrangement is rather woolly and a few good diagrams might well replace the explanation of the action of the spectroscope, which will be almost incomprehensible to the lay reader. The book is also marred by some minor misstatements. Nevertheless the various people to whom it is addressed—the scientist, the social worker, the lawyer, the policeman, and the general reader—will be able to find the facts in it even if they take a little hunting out.

Recent Advances in Medicine

(10th ed.) G. E. BEAUMONT, D.M. Oxfd, F.R.C.P., and E. C. DODDS, M.D., D.Sc.Lond. London: J. and A. Churchill. Pp. 440. 18*s*.

DESPITE the war, Dr. Beaumont and Professor Dodds have had much new material to incorporate in their triennial new edition. The expanded chapter on the sulphanilamide drugs now includes sulphathiazole; but it is not made clear that the nausea and depression produced by this drug are usually much less than those caused by sulphapyridine. Other new material relates to vitamin P, stilbœstrol and hexœstrol, electroencephalography, sodium diphenyl-hydantoinate, lipocaic, sternal puncture, heparin and plasma transfusion, and the estimation of prothrombin. The sections on vitamin B, Addison's disease, and the macrocytic anæmias have been radically revised, and the chapter on basal metabolism has been dropped: one sighs to think how important it seemed fifteen years ago. Though the diabetic section has been much improved, the diets are still calculated in grammes to the second decimal place and have not been adapted to our rationing restrictions. In the chapter on liver-function tests, the value of a galactose test and a phosphatase determination in helping to distinguish between obstructive and hepatitic jaundice finds no place. In other points physicians familiar with a disease under discussion may differ from the authors; for example, they say that hypertensive neuro-retinopathy "may" occur in malignant renal nephrosclerosis, while most observers regard it as essential to the clinical diagnosis. Why should a diabetic, just out of coma, be given an enema? How many moderns treat acute nephritis by cupping and hot-air baths? But some idiosyncrasies are bound to show themselves where two men, however widely experienced, survey the whole field of medicine. Their book remains both popular and valuable.

Schizophrenia in Childhood

CHARLES BRADLEY, M.D., medical director, Emma Pendleton Bradley Home, East Providence, Rhode Island. London: Macmillan Co. Pp. 149. 10*s*. 6*d*.

THIS conscientious study is a satisfactory introduction to the published work on psychoses in children and the bibliography makes it useful as a book of reference. But it will disappoint those who would have liked to learn the outcome of Dr. Bradley's observation of schizophrenic children over long periods. The cases quoted however add little to what has already been observed in child schizophrenics elsewhere; they serve to illustrate those traits which he picks out, but accounts of children's play and fantasies are lacking, and there is no real picture of their relationship with parents or siblings. When he comes to likely ages for onset, he avoids discussing puberty and the early negative phase lest he should be led too far afield. Psychological and physical factors as possible causes of schizophrenia in children actually under observation have not yet, he says, been systematically studied. With the unparalleled opportunities available at the Bradley Home, we may hope he will supply some studies of the kind himself.

The March of Medicine

New York Academy of Medicine Lectures to the Laity, 1940. London: Humphrey Milford, Oxford University Press. Pp. 144. 13*s*. 6*d*.

THE New York Academy of Medicine annually arranges a course of lectures in which medical progress in various fields is expounded in non-technical language by a team of experts to the laity. The recently published series for 1940 consists of six lectures. Dr. Abraham Myerson discusses the inheritance of mental illness and Dr. Perrin H. Long chemical warfare against disease; Dr. Paul Reznikoff tells the story of our knowledge of the blood and Dr. Thomas M. Rivers that of the viruses; the ascent from Bedlam and the evolution of modern psychotherapy are described by Dr. Richard H. Hutchings, and the romance of bronchoscopy by Dr. Chevalier Jackson and Dr. Chevalier L. Jackson. Those who heard these lectures delivered may count themselves fortunate, for it would be hard to find more lucid or more lively expositions. Though designed for the layman, no doctor need think it beneath his dignity to read them, for he can hardly do so without pleasure and profit.

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THE LANCET

LONDON: SATURDAY, JANUARY 31, 1942

E.M.S.—THE NEXT PHASE

THIS war of movement is kaleidoscopic in its changes. Almost nothing which has happened since Russia signed the treaty of friendship with Germany in the summer of 1939 till she was attacked without warning in 1941 could have been foreseen by the ordinary well-informed person. Whether those who were in the best position to judge have been nearer the mark is doubtful. It is in this maze of unknowns that the Emergency Medical Service has been designed and evolved. The immediate burden of air-raid casualties with which it was planned to cope was set at a very high figure, which experience has not verified. It was intended to deal also with Service casualties which might arise from action in this country or Western Europe, and for some Service sick. It has assumed responsibility for the hospital care of many other sections of the population, including evacuated civilians and transferred workers. It has grown by its own momentum. Finding the hospital organisation of the country very uneven in quantity and quality, it has sought to make up local deficiencies in bed accommodation and has developed special units for head and chest lesions, fractures, facial injuries, neurological conditions, pathological services and so on, in areas where they had been embryonic or lacking. This has had to be done within the framework of an incoördinate hospital system founded largely on part-time service from its most highly skilled personnel, at a time when the demands of the Fighting Services for medical men and women of all categories have been steadily growing. The measure of success it has achieved under these difficult conditions is a credit to its architects. On the whole it has proved efficient in dealing with the emergency calls which have so far been made on it, both as the result of air-raids and in the days when the B.E.F. was evacuated from the Low Countries.

So far the headquarters of this service and its agents in the regions have been engaged in building it up. Now they have to accommodate themselves to changing circumstances, and in so doing must create for themselves difficulties somewhat different from those which had to be overcome at the outset. The need of the Fighting Services for medical officers is great. These services have, no doubt, been uneconomical in their use of medical personnel in the past, and though they have already done a good deal in this way there are probably still many directions in which reorganisation and coöperation with one another and with civilian establishments might limit the growth of their demands. While this side of the question should be watched, nothing must be allowed to stand in the way of the full development of their medical efficiency. The E.M.S. and the hospitals with which it is associated have all along made a substantial contribution by releasing young men from their staffs, but this has been done more by the natural flow of young graduates through the institutions than by curtailment of their establishments. Indeed some hospitals are more liberally officered than they were before the war, and others whose bed-occupancy has fallen as the result of war conditions have not cut their staffs accordingly. Swelling outpatient departments are one reason for the retention of medical officers, and this untimely exacerbation of a peace-time problem will have to be examined, but the policy of allowing a margin of personnel in individual hospitals to meet exceptional stress must be still further modified. As experience teaches, as the war changes in fashion and in scope, administrative reactions must be quick, even if they involve taking risks. General practice has supplied a larger slice of its personnel to the Forces without replacement than any other branch of medicine. Civilian hospitals are now being asked to make a like contribution mainly from the junior ranks of their resident staffs,[1] a contribution which can be effective only if the reduction of establishments is maintained for the duration of the war. As the E.M.S. is dependent on most of the hospitals affected, its coöperation in the process is necessary and no doubt assured. But if the reduction is to be done quickly and equitably, it will require not only the full assent and diligence of the regional and hospital medical officers and group officers of the service, and of the visiting staffs of hospitals, but also an abstention from haggling between one hospital or group of hospitals and another. It will also entail greater acceptance than hitherto of the idea that members of the medical staff of a particular hospital shall be freely movable to another as the need arises, and not merely in extreme emergency. Those hospitals which can make use of senior medical students with least interruption of their studies should now recognise that this, the only feasible form of dilution in medical practice, is now imperative. As some compensation for shortage, also, greater use might be made in some areas of medical men in the Fighting Services while they are held in reserve, or under training, or engaged in work which requires their presence but does not fully occupy their time.

A recent letter in our correspondence columns[2] gave expression to the uneasiness among older men at the retention of young consultants or specialists in civilian life under part-time contract with the E.M.S. So far as numbers are concerned—and that is what counts at the present time—this is not a large problem. At the outbreak of war the E.M.S., in anticipation of the heavy casualties then envisaged, impanelled many consultants and specialists and some general practitioners on a whole-time basis, especially in London. Within a few months, when experience indicated that this arrangement was unnecessary, some were released entirely, others were retained at a part-time salary with an obligation to give whole-time service if required in emergency, and others continued to be employed at sessional rates. There are objections to sessional rates for regular part-time attendance on hospital patients, and if whole-time service is not required the second arrangement is clearly the best. If any individuals on such contracts are not devoting themselves conscientiously to their duties or required for them, it is a reflection on the internal administration of the scheme and not on the system itself. It may be that the position of the younger men in this class will have to be reviewed. Although some young specialists were in the Territorial Army

1. See *Lancet*, Jan. 24, p. 114. 2. *Ibid*, Jan. 3, p. 27.

or other reserve forces at the outbreak of war, and have continued to serve outside their specialty, such uneconomic use of special skill is undesirable. The Fighting Services have not so far wanted specialists in proportion to their numbers at so high a rate as other ranks of the profession. If this low rate of demand continues, it may be necessary for specialists to help to fill the quota for general duty, at least until they are required for work in their own province. On the other hand, they might be more profitably employed whole-time in civilian hospitals, in order to release still more young residents for general duty in the Fighting Services. In these Services specialists engaged in hospitals prepare and keep up to date most of their own clinical records, and senior men employed whole-time in civilian hospitals may similarly have to dispense with the help of housemen in this and other ways. Indeed, as the war drags on, all ranks of the profession are likely to find themselves subject to still more regimentation and having to tackle tasks to which they were unused in times of peace.

SCIATICA

UNTIL there is more agreement about the nature of the lesion in sciatica, treatment is likely to remain empirical and as seldom effective as it is at present. It was clear from the RSM discussion reported on another page that part of the difficulty arises in differences of definition: what one person calls sciatica another is not willing to accept as such. It would seem that the neurologist's definition of sciatica is rather more precise than the orthopædist's, and for the purposes of scientific inquiry the more precise the better. Only by accurate definition will sciatica escape from the rather shady implications of "so-called." But for purposes of discussion the term might well cover cases in which pain and physical signs are in the sciatic territory. Again, immediate relief by some form of treatment is too often taken as proof of the cause. It is tempting to assume that because relief follows rest, and rest is a good thing for inflammation, the trouble has been an inflammation of the nerve trunk or roots; or that because the removal of a protruded nucleus pulposus stops the pain that lesion has been solely responsible for the pain. But it is well known that most cases of sciatica recover unaided, even suddenly. Nothing but long-term follow-up will advance our knowledge; such a study might profitably include a review of the after-history in cases of untreated sciatica and in cases treated conservatively, for comparison with those submitted to manipulation, injection or operation; the duration of disability and the number of recurrences should be stated. At present no clear diagnostic differentiation is possible. Radiograms and examination of the cerebrospinal fluid often yield no positive information though they may be of value in excluding other causes of pain in the back and legs. Contrast myelography, by means of air or iodised oil, may or may not disclose a disc lesion, but many surgeons doubtful of the innocence of such oil within the theca have given it up and prefer to explore suspects.

How does all this affect the general practitioner who is asked to treat a case of sciatica? He will perhaps spend more time in taking the history and in examining the case before accepting his own or the patient's diagnosis of sciatica. He will know that most mild cases recover simply by going off work, resting as much as possible, and taking enough of mild analgesic drugs to make life supportable while they are recovering; it is not these cases which worry the doctor. In some of the more severe cases there will be evidence to suggest one of the pathological processes mentioned, and he will proceed to order a local injection or some other manœuvre which he has known to be effective in other cases. In more severe cases, in chronic cases which have resisted conservative treatment, and in the cases with repeated disabling recurrences, he will ask for help from orthopædist or neurologist. These specialists might well work in unison, and no small part of their responsibility should be to follow up their treatment and assess the late results. We must refuse to accept defeat. The discovery of the disc lesion can be taken as a real advance provided it is not invoked to explain every pain in the back and legs. The present-day sufferer from sciatica may take comfort in finding himself a much more interesting case than he would have been twenty years ago.

THE R.C.S. LOOKS AHEAD

DANDELIONS and the Royal College of Surgeons of England are about equally difficult to eradicate; someone should have explained this to Hitler before he wasted all that high explosive. Restoration of the Hunterian collection is already under way, and the surviving specimens, as we have noted,[1] are safely disposed in fourteen different places within 70 miles of London. The officers of the college plan that the restored collection shall embody the best aspects of other museums and introduce new features which will make it useful to students of surgery in its widest sense for years to come. Many people and many societies have already offered specimens; others have sent gifts in money to help in the task of reconstruction. The American College of Surgeons has made a particularly generous gift, in keeping with the help readily provided for the library and research laboratories by the Rockefeller Foundation.

The damage to the college buildings and the shortage of staff make it impossible to receive any large quantities of specimens at Lincoln's Inn Fields, and anyhow it is thought safer at present to send new material to the dispersal centres. Storage jars and preserving solutions are scarce and transport difficult to arrange, but plans have been made for dealing with such suitable specimens as arrive at the college. Dry specimens present no serious problems and the Assistant Conservator will welcome skeletons, skulls, disarticulated bones and "half-sets." Prospective donors of fresh specimens, however, are asked to mark them as destined for the college and to keep them, for the present, until plans can be made for their reception. But it would be helpful if the donors would send a note to the Assistant Conservator telling him what they have to offer; he will then register their gift so that he can call it in when a place is ready for it. He is always willing to advise about the preservation of material destined for the college.

The sections of the Royal Society of Medicine are to be invited to appoint members to organise the collection of specimens in particular subjects. The invita-

1. *Lancet*, Jan. 3, 1942, p. 17.

tion will be made directly at meetings of the sections by Sir ALFRED WEBB-JOHNSON, president of the college. Pathological specimens of conditions rare in this country have already been promised from all quarters of the Empire and from friendly countries. These are being set aside until they can be sent with safety and convenience. The new museum is quickening.

Annotations

THE RANGE OF MOSQUITOES

LIKE Spitfires, mosquitoes are spirited performers within their range; but whereas the range of a Spitfire can be nicely calculated, the range of a mosquito can only be observed, and so excites hot disputes. Napier in our correspondence columns[1] has described cases of malaria occurring on board a ship lying more than a mile from the shore at Freetown. He assumed that mosquitoes must have reached it by sustained flight aided by an off-shore wind, by interrupted flight from ship to ship across the harbour, or by travelling out as passengers on the fruit boats. Manson-Bahr later pointed out[2] that, given a favourable wind, subtertian malaria could be contracted anywhere in Freetown harbour. Some fresh observations by Hopkins,[3] senior entomologist to the Uganda Medical Department, have lately appeared on the flight range of anophelines. Such studies have so far been few in Africa, and workers have been content to follow a rule of thumb, undertaking antimalarial measures within a radius of a mile (or sometimes half a mile) of the area to be protected. The discovery of large numbers of *Anopheles funestus*, a dangerous species, at much greater distances than this from its breeding place led to the investigation. Hopkins distinguishes between maximum range and maximum effective range of mosquitoes. He quotes De Meillon who, working in the Transvaal in 1934, found two female *A. funestus* in a house 4½ miles from the nearest breeding place, with no dwellings between. There had been no malaria among the occupants of the house, although they took no precautions against it—which suggests that 4½ miles was beyond the range at which the anophelines could collect in sufficient numbers to cause an appreciable amount of malaria. He also established that both *A. gambiæ* and *A. funestus* flew with the prevailing wind. P. C. G. Adams, who continued De Meillon's work at Nkana, found that control to a distance of 1½ miles to windward and ½ mile to leeward of the town was not sufficient to prevent the arrival in it of considerable numbers of *A. funestus* from an unusually prolific breeding site 3–4 miles to windward. Thus a strong prevailing wind can make long-range flights significant. Hopkins carried out his study at Busoga College, where there was a high incidence of malaria among staff and pupils. The college stands on a hill about 2 miles from Lake Victoria, whence it receives a prevailing wind by day. *A. funestus* were found to predominate among mosquitoes inside the buildings; *A. gambiæ* were few and were easily eliminated by destruction of breeding places near the college. No breeding places of *A. funestus* were found within 2 miles of the buildings except in one pool nearly that distance to southward; otherwise the breeding places were found in the extensive swamps fringing the lake shore for miles in each direction. Though the larvæ were not found in great numbers, the extent of the breeding area made it possible for *A. funestus* to sponsor a disquieting amount of malaria in the college. The species was rare to the west and north of the college, which suggested that 2 miles was about the limit of the effective range. The work of many observers in Africa goes to show that the evening entry of mosquitoes into houses is the important one, consisting largely of females coming to feed; the morning entry consists chiefly of males, with a few females who have already fed, taking shelter for the day. At Busoga College the lake breeze blows from 9.30 A.M. to 11 P.M., when it is replaced by the night land breeze. Thus, with the help of the lake breeze, mosquitoes arrive in their greatest numbers from the breeding grounds in the early part of the night. The lake breeze is not due south, but south-east, and this means that mosquitoes flying with the wind probably come from the most prolific breeding place, about 2½ miles from the college. Hopkins concludes that in Uganda neither *A. funestus* nor *A. gambiæ* are likely to fly much more than half a mile in sufficient numbers to give trouble unless the breeding places are up-wind from the dwellings and exceptionally prolific; the few that do exceed this range can be effectively frustrated by such personal protective measures as mosquito-proof houses, bed-nets, and mosquito boots. But where the breeding grounds are extensive and the prevailing evening breeze favourable, the flight range may be 2 miles or more.

1. Napier, L. E. *Lancet*, 1940, ii, 603.
2. Manson-Bahr, P. *Ibid*, p. 696.
3. Hopkins, G. H. E. *East Afr. med. J.* 1941, **18**, 175.

BISMUTH AS ANTACID: AN EXPLODED REPUTATION

BISMUTH subnitrate or carbonate has been advocated for over a century for the relief of the pain of peptic ulcer and other gastric conditions. The subnitrate fell out of use when it was found sometimes to cause nitrite poisoning. The carbonate was held to relieve gastric pain either by neutralising gastric acidity or by coating the raw surface of an ulcer with a layer of insoluble powder that somehow protected it against mechanical or chemical insult. But does bismuth carbonate neutralise acidity or coat an ulcer? And does it relieve gastric pain? Freezer and his colleagues[1] provided a clear answer to the first question a dozen years ago; the chemists showed that the neutralisation of hydrochloric acid and alteration of the pH of gastric juice by bismuth carbonate was trifling beside that achieved by other antacids; the radiologist could see the bismuth in the lower pole of the stomach or diffused through its contents, but never coating the ulcer. Alstead[2] has swung another axe among the dead wood. He has shown again that the neutralising action of bismuth carbonate on hydrochloric acid and on gastric juice, both in test-tubes and in the stomach, is negligible. He has proved that the minute amount of bismuth that goes into solution can have no useful astringent action, and demonstrated again that swallowed bismuth carbonate is not mysteriously attracted to an ulcerated surface. Whether bismuth relieves gastric pain cannot be decided by general clinical impression, because it is customary to give it along with other antacids. Alstead overcame this difficulty by giving coloured powders of pure bismuth carbonate to patients with gastric pain, and asking them to report the effect of these and of other differently coloured and inert powders. The patients found no peculiar virtue in the bismuth carbonate, although most of those tested got prompt relief from magnesium hydroxide. Alstead has thus endorsed Hurst's view[3] that the small dose of bismuth carbonate given with sodium bicarbonate in the usual alkaline mixtures, powders and tablets is very unlikely to exert any action. Since it also has the disadvantage of making the stools black, so that the patient cannot immediately recognise slight melæna, its use as an antacid has nothing at all to recommend it and a great deal to its discredit. Bismuth has important thera-

1. Freezer, C. R. E., Gibson, C. S. and Matthews, E. *Guy's Hosp. Rep.* 1928, **78**, 191.
2. Alstead, S. *Lancet*, 1941, ii, 420.
3. Hurst, A. F. and Stewart, M. J. Gastric and Duodenal Ulcer. London (1929).

peutic and industrial uses which make its frivolous use in stomach mixtures still less justifiable. The National War Formulary advises that it should be reserved for the treatment of syphilis, and that magnesium trisilicate should take its place in antacid powders. Finally the present cost of bismuth makes its waste unjustifiable. Hospitals can buy calcium carbonate at 10*d.* a pound and magnesium carbonate at 1*s.* 4*d.*, and both are good antacids. Bismuth carbonate can only be prepared at considerable expense. The crude ores are imported at 1*s.* 7*d.* per lb., but the refining charge is heavy, so that the cost price of the pure metal is 5*s.* 7*d.* Bismuth carbonate in 2 cwt. lots costs about 8*s.* per lb., and the retail price in the N.H.I. drug tariff is 12*s.* 6*d.* Thus it is not only a mistake to use bismuth carbonate as an antacid but a costly mistake; worse, it deflects bismuth from more important service in the construction of aircraft. The fact that the Japanese are now in need of 100 tons of bismuth which they cannot get should teach us to husband ours.

PRESSURE AND POISONING

EACH 33 feet of sea-water exerts a pressure of one atmosphere, and this means that for every foot a man goes below the surface his body must withstand an added pressure of half a ton. Men working deep down must be protected either by enclosing them in a rigid vessel (e.g., a submarine) capable of withstanding the pressure, or, if their body is exposed, by supplying their lungs with air at the same pressure. The dangers attending return to the surface have been well known since the time of Paul Bert,[1] and the symptoms in 300 non-fatal cases of "caisson disease" have lately been described.[2] These appear when nitrogen forced into solution in the blood and tissues by pressure reappears on decompression in the form of bubbles. Everyone nowadays is familiar with the analogy of the soda-water syphon, though perhaps not with the fact pointed out by Piccard [3] that a sudden 5 to 1 decrease in pressure is more dangerous for the diver than for the aviator. While the speed of growth of a bubble of given diameter is a function of the change of pressure, to both old and new pressures must be added a component—call it y—dependent on the surface tension of the liquid. The ratio of the pressure change is therefore for the diver $5 + y/1 + y$, but for the aviator $1 + y/0{\cdot}2 + y$ which is a smaller figure. Starting from this simple idea, Piccard shows that over a range of low pressures equilibration is slower than over an apparently equivalent range of high pressures, and that this is advantageous to the individual under the lower pressure conditions. The evolution of nitrogen in this way is apparently not the only factor in the production of caisson disease—Swindle [4] puts erythrocyte agglutination as the primary disturbance—but it is the source of the typical "bends." Nitrogen is more soluble in fatty than in aqueous media; the body as a whole will therefore accommodate 70% more than will an equal volume of blood, or 26 times as much as its own available blood-volume can carry.[5] The safe diffusion of nitrogen can only take place from the lungs, so the blood acts as a bottleneck in elimination, and decompression must be carried out by easy stages. A time factor is introduced by the tissues taking up nitrogen at different rates: a long saturation time portends a long desaturation time, so the duration of exposure to pressure greatly influences the speed at which safe decompression may be accomplished. A diver may stay for more than 3 hours at 50 ft. and emerge with one stop of 20 min. on the way up, whereas at 100 ft. if he is to break surface after the same interval (three stops of 3, 7 and 10 min.), he may not stay for more than 30 min. Even in shallow dives, after which immediate decompression is permissible, rupture of the lungs with mediastinal emphysema and air embolism may occur if the diver holds his breath during his ascent to the surface. Some fatal submarine escape accidents have been attributed to this cause, the first step in escape having been the raising of intrapulmonary pressure to that of the surrounding water.[5] Oxygen is also forced into solution in the blood, but is not immediately dependent on diffusion from the lungs for its escape because the tissues can actually use it. Decompression can therefore be accelerated by substituting oxygen for some of the nitrogen of the air, but pure oxygen probably at 2 and certainly at 3 atmospheres has a poisonous effect.[1] With growing interest in greater depths, and particularly in factors which may prove disastrous in submarine escapes, the pharmacological effect of other common gases at high pressure has become of importance. The latest investigation is that of J. B. S. Haldane and others,[6] who confirm recent American statements that nitrogen is an intoxicant at high pressures. The onset and disappearance of symptoms are rapid, arguing an effect on the most vascular part of the nervous system—the grey matter. High pressures of carbon dioxide cause mental confusion and loss of consciousness, the effects coming on earlier in the presence of high nitrogen pressure. This is shown by comparing the effects of air containing 0·3% CO_2 and compressed by 10 atmospheres with those of a 3% concentration of CO_2 in uncompressed air. Hydrogen and helium when used instead of nitrogen do not produce symptoms of intoxication, but Haldane does not regard helium as a safeguard against "bends" and other phenomena arising purely from decompression. In this he is at variance with some American opinion, but is sustained by the daily inconvenience he suffers from the ravages of a helium bubble, nitrogen having actually behaved in his experience no worse than helium and certainly with greater delicacy. He thinks the non-toxicity of helium can be attributed neither to a difference in chemical properties nor to greater diffusibility, but to some usually unconsidered physical properties. Casualties in his hardy team of investigators have been light, though many of the experiments involve risk and most of them discomfort. A few required immersion in ice-cold water in addition to other inconveniences, but the important fact emerged that temperature had little to do with the experimental results.

1. Bert, P. La pression barométrique; recherches de physiologie expérimentale, Paris, 1878.
2. Thorne, I. J. *J. Amer. med. Ass.* 1941, **117**, 585.
3. Piccard, J. *Proc. Mayo Clin.* 1941, **16**, 700.
4. Swindle, P. F. *Amer. J. Physiol.* 1937, **120**, 59.
5. Haldane, J. S. and Priestley, J. G. Respiration, Oxford, 1935.

SPEMANN'S GREAT IDEA

THE experimental study of development initiated by Hertwig and Roux towards the end of last century received its main impetus from the brilliant work of Hans Spemann, whose death at the age of 72 has been announced.[7] The concept of the "organiser" took shape from observation of amphibian embryos which disclosed the process of development as a progressive elimination, in time and space, of certain potentialities of cells at first omnipotent. Within limits set by the characters of the species, the fate of a given cell (except in small details) depends not upon itself but upon an influence emanating from an "organisation centre." Cells destined to form (say) ventral ectoderm can, at an early stage, be induced to form nerve cord if transplanted to a certain position relative to the primary organisation centre (blastopore lip or primitive streak). This primary centre determines a pattern of subcentres, each of which in turn works independently to determine the pattern of an organ, where centres of a still lower order appear. There is a well-ordered and progressive delegation of responsibility from a central directorate to authorities of a lower and lower grade. The moulding

6. Haldane, J. B. S. *Nature*, Oct. 18, 1941, p. 458; Case, E. M. and Haldane, *J. Hyg., Camb.* 1941, **41**, 225.
7. *Schweiz. med. Wschr.* Sept. 27, 1941.

of a lens from epidermis under the organising influence of the optic cup is an example of a final stage investigated in detail by Spemann and Mangold. One of the most remarkable features of the action of an organiser is that it is complete before any visible change appears in the cells upon which it reacts. This invisibly determined tissue, as Spemann showed, will differentiate into an organ, such as a limb, when transplanted to a position where that organ would not normally appear. Under his influence, research into the nature of the organising stimulus was started in Freiburg by Fischer and Wehmeier, followed shortly by similar investigations by Needham and others at Cambridge. It now appears that the stimulus inducing a particular kind of tissue is chemical in nature, but the "organisation" of this into a characteristic pattern has so far eluded analysis. The line of work initiated by Spemann has in fact brought us face to face with the central problem of biology. His achievement depended as much upon his remarkable skill in micro-surgery as upon his insight into the significance of his results. He was awarded the Nobel prize for medicine in 1935. In the same year he gave an account of the progress of experimental embryology in his Silliman Lectures at Yale. These were published in 1937 as "Experimentelle Beiträge zu einer Theorie der Entwicklung" (Engl. trans. "Embryonic Development and Induction." Yale. 1938).

DENTAL BOARD FINANCE

OPENING a recent session of the Dental Board Mr. E. L. Sheridan remarked that they must take the risk of being called close-fisted. The finance committee had submitted a budget of £10,950 for the year 1942, of which £10,500 was to go in educational grants. This requires the sanction of the General Medical Council which can hardly reproach the younger board for stinginess to students when it spends no penny itself on them. The dental grants of course come out of the pooled annual fees which every dentist has to pay to retain his name on the register. Would the same provision in a new Medical Act be salutary? Last year the retaining dental fee was £2, or £1 for the newly qualified; this year the pound has become a guinea to square the balance sheet. While we agree with the chairman of the Dental Board that domestic happiness implies solvency we think it might be more generally known how much dental education owes to the enlightened generosity of its statutory authority.

FLUORESCENCE MICROSCOPY OF TUBERCLE BACILLI

THE spontaneous fluorescence of certain substances was observed by Kohler while experimenting with the ultraviolet dark-field microscope in 1904, but it was not until 1917 that Kaiserling noted that a suspension of tubercle bacilli gave a whitish blue fluorescence, and even then the practical importance of the observation does not seem to have been grasped. In 1925 Arloing, Policard and Langeren discovered that the fluorescence of human strain tubercle bacilli was grey and bovine strain violet, but again nothing further resulted until in 1938 Hagemann turned these observations to practical account by devising a fluorescence technique for the identification of acid-fast bacilli. Since then the need for special apparatus has deterred bacteriologists from experimenting with the new method extensively, but O. W. Richards, E. K. Kline, and R. E. Leach have now described[1] a simple apparatus whereby the tubercle bacillus can be studied readily by fluorescence microscopy. Briefly the apparatus consists of light from a source rich in ultraviolet rays passed through a blue ultraviolet transmitting filter, reflected through the microscope from an aluminium surfaced mirror and finally passed through a yellow contrast filter placed in the eye-piece to protect the observer's eyes. This apparatus can be used with the monocular microscope. Films of sputum are stained with 0·3% auramine in 3% carbolic acid solution at room temperature, and decolorised with 0·5% hydrochloric acid and 0·5% sodium chloride in 70% alcohol. The fluorescence technique gave rather better results than Ziehl-Neelsen stained direct films and concentration tests. A series of sputa which yielded 31·3% of positives with a combined Ziehl-Neelsen concentration technique, gave 33·3% with fluorescence examination. When compared with direct smear Ziehl-Neelsen staining without concentration a series showed 92·3% of positives for fluorescence as against 74·3% for Ziehl-Neelsen. Emil Bogen[2] records the results of the examination of 1000 routine sputum smears, in which the fluorescence method gave 20% more positives than the standard Ziehl-Neelsen technique. On the other hand 250 sputa examined both by culture and by fluorescence yielded 24% of positives by culture against 11·6% by fluorescence.

1. *Amer. Rev. Tuberc.* 1941, **44**, 255. 2. *Ibid*, p. 267.

EVERYTHING IN THE GARDEN

THAT it is the duty of everyone to crop every square yard of garden possible for home consumption and for sale, exchange or gift, goes without saying, and it is well that a systematic sequence of crops should be planned throughout the year so that there shall be no deficit of vegetables in winter and early spring, and no excess in summer. The Ministry of Agriculture sets out such a plan for cropping allotments in its bulletin No. 1 "Food from the Garden" in 1939 and daily records from 98 gardens and allotments planted according to the Ministry's plan for the season of 1940 have been collected and analysed.[3] According to the analysis, both from the gross yield and from the vitamin A and C values, such gardens yielded an admirable addition to the dietary. Excluding potatoes, the gardens averaged sufficient vegetables in each quarter for from 6·7 to 10·1 people, whereas they need only supply 4–5 people each. As regards vitamin A they supplied the needs of 2 people, and as regards vitamin C of 8–12 people according to the season. Those of us who cropped gardens of a similar size in the adverse conditions of 1941 may raise an eyebrow at these results. 1940 was an exceptional year, as was shown by its onion crop; in 1941 onions were of the bottle-neck persuasion and have failed to keep, and greens were reduced to lace-work by successive raids of caterpillars. The assessments of vitamins A and C in the effort have been made in a rough and ready way. All the green vegetables have been lumped together and an average figure accorded to them. Thus lettuce finds itself credited with 65 mg. of vitamin C per 100 g., whereas figures for lettuces grown in England are about a tenth of this and bulb onions are credited with 16, which is almost certainly too high. Then vitamin A is assessed on the carotenoid value, and we have learned to be chary in accepting carotenoid values. Biologically estimated values for the carrot give results about a sixth of those based on carotene content. Such criticisms however do not invalidate the main conclusions of this analysis which is that carefully planned planting pays.

DR. ARCHIBALD KERR CHALMERS, who died at Bridge-of-Weir on Jan. 24 in his eighty-sixth year, was chief health officer of Glasgow for thirty-three years, retiring in 1925. A prodigious worker and an accomplished writer he left his mark on the exciting period of sanitary evolution in which it was ordained that he should hold a key-post.

The veteran Dr. PERCY KIDD also passed to his rest on Jan. 21.

3. Taylor, H. V., Drummond, J. C., and Pyke, M. *Nature, Lond.* 1941, **148**, 712.

Special Articles

WAR WOUNDS OF THE CHEST

Dr. ROBERT COOPE on Jan. 15 opened a course of lectures on war wounds of the chest, planned by Mr. MORRISTON DAVIES and his colleagues of a chest surgical unit E.M.S., at the Liverpool Medical Institution, with a consideration of the

ANATOMICAL AND PHYSIOLOGICAL BACKGROUND

A surface for the absorption of oxygen and excretion of carbon dioxide whose area is more than half that of a tennis court is, he remarked, packed neatly into the comparatively small volume of the lungs, the air-passages and their subdivisions being the channels whereby the air is brought into effective contact with the blood capillaries in the alveoli of well-defined and corresponding geographical areas. Seeing that the dome of the diaphragm projects well upwards, wounds of the lower thorax may easily involve the abdomen as well, and bleeding into the pleural cavity may therefore on occasion come from the liver. Wounds which damage the bony framework of the thoracic cage may not only tear the arteries under the ribs, but also drive jagged pieces of bone into the lungs, causing laceration of and bleeding from the lung, pneumothorax and often subcutaneous emphysema. Bleeding from the lung itself tends to cease spontaneously, partly because of the low blood-pressure in the pulmonary system, and partly because the laceration may be sealed as the lung contracts down. If such a lung is allowed to re-expand too soon, the imperfectly healed tear is opened up again and bleeding recurs.

While the lungs and visceral pleura are insensitive to pain, the parietal pleura and the periosteum of the ribs are richly supplied with pain nerves. If one or more ribs have been damaged by crushing, bullet or high explosive fragments, pain is severe, continuous and made agonising by deep respiration or by coughing. So the breathing is quick and shallow, and inspiration is cut short by a painful grunt. This rapid, shallow, incomplete breathing produces a greater or lesser degree of anoxia, with resultant cyanosis, and at the same time carbon dioxide is washed out of the blood. So the cyanosis becomes mauve and not deep purple, and as the condition worsens livid or leaden—an indication of dangerous anoxia. Early oxygen administration is called for, therefore, to prevent the development of serious anoxia. Moreover, coughing is even more painful than breathing, so that the patient does not clear his bronchial tubes. Hence the frequent development of obstruction of a bronchus by a plug of mucus, mucopus or blood clot, with resulting absorption collapse, either of the injured lung, or of the contralateral lung if the patient is kept lying on his sound side.

On both counts, morphia (given in doses sufficient to ease pain but not to abolish the cough reflex) is seen to be a drug of the first value in wounds of the chest. Moreover, firm and active support of the patient's thorax, while he has what he calls a good cough periodically to clear the air-passages, is an important detail in treatment. If a patient with a wound of the chest can be sat up or propped up, he is more comfortable than lying down. The reason is that more blood collects into the splanchnic area, and congestion is lessened. The lungs are thus less rigid, and can be stretched more in inspiration before the Hering-Breuer reflex comes into play, with the result that breathing is less shallow and rapid, and vital capacity is increased.

Discussing pneumothorax, Dr. Coope pointed out that in open pneumothorax the mediastinum flaps to and fro, with consequent irregularity of return of blood to the heart via the great veins, and therefore marked inequality of systolic output. The grave danger of tension pneumothorax was pressure on the great veins, again with interference of return of blood to the heart. The patient's vital capacity is obviously an important prognostic factor in wounds of the chest. An old patient with already badly damaged lungs and a poor vital capacity, for example, was killed by a pneumothorax, which did not produce a positive intrapleural pressure, the alteration being only from — 8 mm. to — 2 mm.

Physical signs in wounds of the chest are not so much equivocal as unfamiliar. The breaking of a number of ribs, for example, entirely alters the thoracic cage as a vibrating percussion instrument. Subcutaneous emphysema produces its own signs which may obscure those of underlying lesions. The frequency of œdematous exudations and bleeding into the bronchi and alveoli make adventitious sounds extremely common in chest injuries.

INJURIES WITHOUT EXTERNAL WOUNDS

Mr. RONALD EDWARDS discussed the treatment of chest injuries without external wounds. Fractured ribs were, he said, a common feature of civilian accidents, and their treatment was the same under war-time conditions. The complications of hæmothorax and tension pneumothorax must however be watched for. The position of the apex-beat of the heart was probably the most important sign in all chest injuries; if this was found to be displaced, there was a rise of intrathoracic tension which needed correction. Tension pneumothorax was treated by inserting a wide needle through the second or third space anteriorly and connecting this to an under-water seal bottle. The tear in the lung usually became sealed off in 24–48 hours. Empyema may supervene. Hæmothorax may need aspiration. Fractures of the cartilages, which may cause continuous pain, were frequently missed. Strapping, as for fractured ribs, would cause healing in 3–4 weeks. Fractures of the sternum, particularly if transverse, were usually associated with a crush fracture of the spine, and their treatment was that of the spine. A depressed fracture may need elevation, but an uncomplicated fracture was best treated by many layers of strapping from the axilla to the opposite clavicle. A direct blow on the sternum may cause severe shock due to trauma to the heart.

Stove-in chest, in which a considerable number of ribs were fractured in two places giving rise to an area of the chest that moved paradoxically with respiration, caused severe shock, dyspnœa, cyanosis and hæmoptysis. Breathing took place from one lung to the other. The paradoxically moving area must be controlled by a firm pad and strapping encircling the chest. Continuous oxygen therapy by BLB mask was necessary; morphia and atropine should be given in considerable doses, the latter to control the excessive secretion from the alveolitis and bronchitis secondary to the extravasation of the blood into the traumatised lung. Dextrose (30%) 20 c.cm. intravenously 4-hourly was valuable to control the tendency to pulmonary œdema. It is important that the nurse should be instructed to stand behind the patient with her hands firmly gripping each side of the chest and encourage the patient to cough. Without this support he is usually unable to do so, and may drown in his own secretions. The procedure should be repeated every half hour. Cardiac damage was frequent; tachycardia, irregularity, low diastolic pressure, bruits due to ruptured valves and dilatation of valvular rings all may be noted and need the coöperation of a cardiologist. Transfusions in such cases should be given with the greatest circumspection. Rupture of abdominal viscera may occur at the same time, though the diagnosis is made extremely difficult by the fact that there may be reflex rigidity of the abdominal wall, acute dilatation of the stomach, and paralytic ileus, all secondary to irritation of the intercostal nerves. Any increased intra-abdominal tension must be energetically treated, as the main respiration in these patients is diaphragmatic. Traumatic asphyxia—a multiple rupture of capillaries due to back-pressure from the great veins—may be present, but in itself calls for no treatment. Retinal vessels may be involved leading to blindness, temporary or permanent.

Blast lung is due to the compression wave of the explosion striking the chest. This wave is of great rapidity, and the chest wall, lung and contained air act as a solid body. The alveolar capillaries, being the weakest structure, rupture and produce alveolar and interstitial hæmorrhage. There is intense dyspnœa, tachycardia, hypopiesia, and some hæmoptysis with no evidence of external wound. Coarse crepitations are heard in the chest. The patient is often quite unable to account for his condition. Morphia, oxygen, and atropine are indicated. Such cases are unsuitable for an inhaled anæsthetic, and blast lung may complicate other

injuries that need urgent treatment. Local anæsthesia or local and minimal evipan must then be employed. A foreign body may enter the chest via the abdomen, thus simulating blast lung from which a skiagram will distinguish it. In such cases an inhaled anæsthetic (e.g. cyclopropane) is permissible as the lung trauma is likely to be more localised.

Surgical emphysema, unless extremely severe, usually needs no treatment. If severe, a wide needle may be inserted under the skin and fascial planes and the air milked along towards it. Mediastinal emphysema, if considerable, may require a thoracotomy and incision of the mediastinal pleura, allowing exit of the air via the pleural cavity, intercostal tube and under-water seal bottle.

MEDICINE AND THE LAW

G.M.C.'s Erasure Contested

A PRACTITIONER whose name has been erased from the Medical Register has successfully applied to the Divisional Court for leave to challenge the decision and for a direction that the decision be annulled. He complains that the G.M.C. acted without the "due inquiry" which section 29 of the Medical Act prescribes and he asks that due inquiry be made. The practitioner was co-respondent in divorce proceedings in which a husband was granted a decree on the ground of his wife's adultery. The G.M.C. thereafter directed the doctor to appear before them to answer the charge that, inasmuch as the alleged adultery took place while he was in professional relationship with the petitioner's wife, he was guilty of "infamous conduct" within the section. It will be recalled that section 29 gives two grounds for erasing a name—a conviction for crime and a decision "after due inquiry" that the practitioner has been guilty of infamous conduct in any professional respect. The G.M.C. would be bound by the finding of the criminal court in the former case. The question now is whether the decree of the Divorce Court is equally binding or whether the G.M.C. can be compelled to retry the issue of adultery. The practitioner's solicitors sought to offer fresh evidence which was not before the Divorce Court; conceivably the G.M.C., not being bound by the strict rules of evidence, might accept testimony which would be legally inadmissible in a court of law. The G.M.C. treating the issue as *res judicata*, declined to sit as a court of appeal from the Divorce Court. Thus an interesting and perhaps novel point arises; did the G.M.C. in accepting the result of a judicial inquiry, fail to make that "due inquiry" which the act requires?

A Swallowed Chicken Bone

A recent Westminster inquest raised the question whether, if a patient complains of having swallowed a bone, the hospital is at fault in omitting to examine him with an œsophagoscope. A sergeant in the Army Physical Training Corps, lunching at home on Dec. 27, had a choking sensation after taking a bite from a chicken leg. He went to a hospital where the doctor, having looked at his throat and seeing no foreign body, gave him a crust of bread which seemed to be swallowed quite easily. The patient was told to return in the morning or to report to his own medical officer. He came back later in the day and complained of pain in breathing. A second examination disclosed nothing alarming and he was again told to come back next morning. Dr. R. M. Haines, assistant pathologist to Westminster Hospital, in answer to a question by the coroner, said that the use of an œsophagoscope might possibly have revealed a small flat piece of bone in the patient's gullet. The coroner adjourned the inquest for further evidence. The doctor who had attended the patient said that he had relied upon his own judgment and examination; some people had a nervous impression that they had swallowed a bone when in fact they had not; even when they had, the passage of the bone was sometimes quite normal. He agreed that, on the facts now known, it was likely that the œsophagoscope would have shown the piece of bone. Dr. Haines, recalled, said that, since the previous hearing, he had come across two similar cases where the swallowing of a bone proved fatal even though it was removed. The coroner said that the evidence had been given frankly. A doctor who has to make up his mind on the spot, and who makes a proper examination and comes to a reasonable conclusion, is not to be held responsible even if he turns out to have been wrong. The passage of an œsophagoscope was "not a matter to be taken light-heartedly." He was satisfied that the action taken did not lend itself to any adverse comment. A verdict of death by misadventure was recorded.

RICKETTSIAL INFECTIONS IN MAN

CURRENT notes for December of the Army Pathology Laboratory Service deal with the laboratory diagnosis of rickettsial infections in man. Man is susceptible to a number of rickettsial infections and it is essential at the present time for all pathologists to have the means of identifying them. The chief insect vectors are known and it is often possible to isolate from them the causal rickettsiæ by inoculation into animals. The first table in the notes will therefore be of interest to the general reader.

Disease	Rickettsia	Geographical distribution	Insect vectors	Possible vertebrate reservoirs
Exanthematic typhus	*Rickettsia prowazeki*	Europe, Abyssinia, North Africa, Belgian Congo, Asia Minor, Persia, North China, Mexico	Louse *Pediculus humanus*	Man
Endemic or murine typhus	*R. prowazeki var mooseri* (= *R. muricola*)	worldwide	Rat flea *Xenopsylla cheopis*	Rat (squirrel, shrew)
Tsutsugamushi disease	*R. orientalis* (= *R. tsutsugamushi*)	Japan, Formosa, Malaya, Java, Sumatra, New Guinea	Larva of *Trombicula akamushi* (Japan) *T. deliensis* (Malaya), *T. deliensis* (India), *T. minor* (New Guinea)	Bandicoot
Trench fever	*R. quintana* (= *R. volhynica* and probably *R. weigli*	North Africa	Louse *P. humanus*	Man
Rocky Mountain spotted fever (Eastern & Western forms)	*Dermacentroxenus rickettsi*	U.S.A.	*Dermacentor andersoni, D. variabilis*	Goats, hares and other small rodents
Fièvre boutonneuse	*D. rickettsi* var *conori*	Mediterranean zone	Dog tick *Rhipicephalus sanguineus*	Dog
South African tick typhus	*D. rickettsi* var *pijperi*	South Africa*	Tick *Hæmaphysalis leachi*	Dog †
Sao Paulo rural typhus	*D. rickettsi* var *brasiliensis*	Southern Brazil	Tick *Amblyomma cajennense*	Opossum
Q fever	*Rickettsia burneti* (= *R. diaporica*	Australia, U.S.A.	Ticks *Hæmaphysalis humerosa, Dermacentor andersoni, D. occidentalis, Amblyomma americanum Rhipicephalus sanguineus* ?	Bandicoot

* Tick-borne typhus also occurs in Abyssinia and in Kenya where the dog tick *Rhipicephalus sanguineus* acts as vector.

GUEST HOSPITALS.—A ward was opened at the Royal London Ophthalmic Hospital (Moorfields) on Jan. 8, by arrangement with the British Red Cross, for sick nurses of the Free French Forces. A central hospital with about 100 beds is to be opened by the Norwegian Government in a section of the Craiglockhart Hospital, Edinburgh.

In England Now

A Running Commentary by Peripatetic Correspondents

CONSIDERING that women differ from men even in such tiny details as the distribution of hair on their big toes it is not surprising that in the matter of medical practice with all the important sex-linked genes in play the difference should be profound. Recently I did a locum for a woman practitioner and walked into an alien atmosphere, where, incidentally, I felt most inadequate. Her patients loved her, not in the way they may love the old-man physician or priest, a lesser form of God-worship, but rather as they might love their old nannies with a big spot of the confidence for the family solicitor thrown in; a very helpful and important member of the team against illness, but not its supreme autocrat. With all women's centuries of cooking experience I expected to find some cunning dispensing going on, but I was disappointed—she relied almost entirely on stock mixtures; like buying cooked meals. Is this exceptional? Another point—when she was telling me about the cases there was a curious lack of sequence in her accounts. "Poor old Jones has got a belly full of fluid and has strange attacks of giddiness and I believe he rather liked his liquor." Whereas a man would have said, "Jones drank a hell of a lot, got cirrhosis and a high blood-pressure." To a male mind this seems more logical, but the less consequential female point of view does prevent one from getting fixed ideas, keeps the whole question open, which facilitated the discovery that the salient point about poor old J. was that he was a manic-depressive. While I was writing this an item came through on the wireless: "Mr. Eden would not at present consider the admission of women to the diplomatic or consular services." Mr. Eden would not consider. . . . Is it because male diplomacy has been so successful, his systems of finance and production have worked wonderfully, so that the fair earth with its abundant fruits basks in peace and happiness? It is high time someone wrote this brutal truth: God may be asexual, man may ape his God with a merely saccular attachment to the fecund earth, but deeply embedded in women are the primal seeds and needs of humanity, and her voice has got to be heard in the ordering of the earth and the urgencies thereof.

* * *

Last year when I went to view the shelters the snow was on the ground; this year it was in the air as well, so I was blamed for it. The Pacifist Service Unit was kind enough to greet me as an old friend. The shelters were strangely different; my friend the shelter nurse has married and gone; the hum of crowded quarters has sunk to hollow echoing, as the few determined shelterers settle themselves in for the night; the lighting is better and makeshift latrines have given way to chemical closets or porcelain pans, water flushes and hygiene. This is all to the good: if the raids begin again, the shelterers have decent quarters waiting for them; but so perverse is the human mind that I half regretted the strenuous good-humoured spirit of the blitz months. One or two play centres were to be seen, but the snow, no less than quiet nights, was keeping the children at home. I saw a few making some astonishing rugs, and I visited the space set aside for painting and organised games. The paintings, as usually happens with children's work, took one aback by their vigour. One drawing of footballers, apparently viewed from mid-air at an angle of 45° to the ground and the goal-posts, was especially lively and clever. The shelter under the church was so well lighted this year that it was easy to read the names on the vaults which flank it, their doors locked upon dead Londoners. My companions pointed out almost affectionately an ancient stone announcing: "The family vault of Mr. Pigg." Bunks have replaced the benches of last year, and now Mr. Pigg sleeps no more quietly than the families who share his taste for a vault.

The P.S.U. have lost some of their occupations. They no longer clean the shelters, that being now a municipal job; and they no longer carry the affairs of many homeless people on their shoulders: alternative accommodation has been found for those remaining residents of Stepney who may find themselves bombed out in times to come. The unit has also lost—to another region—a leader whose mind seemed to be permanently hotching with plans for social activities. Still, they are finding things to do and are ready for more. There is furniture to remove, as people come back to London or return to their mended homes, and house-decorating for old people who cannot manage it; and there are still rounds to make of the shelters with an offer of service to anyone who needs it. And the unit welcomes a guest as warmly as any company I know.

* * *

Once I used to be very proud when any journal published anything of mine, and used to wonder whether I could afford twenty-five reprints, and give them to my seniors who thanked me and told me how interesting my paper was. This had a bad effect when I began to get on and ordered quite a number of reprints and circulated them widely. Then came the time when I thought what I wrote so important that I ordered reprints in bushels—large numbers cost little more than a few, and I could thereby tell the world. I sent off a dozen of them and the rest got stacked in an old cupboard. Now again I am proud when any paper publishes anything I write, but I do not order reprints. I know that a few will be interested in what I write and will tear the pages out or make a note of the reference. To the people who send printed postcards asking for a reprint I reply that I have had none made and get a kick out of telling them that if they want a copy they can get one by buying the journal at such a price from such an address. I can almost hear the sighs of relief of those others to whom I used to send reprints. They meant to read them, they put them aside and there they lay until their wives or mothers turned them out for the salvage. And so today my patriotism marches with my wish. I do not order reprints and thereby save the paper; when I receive one, I forthwith send it to the pulper with which to make munitions; and I am turning out all the stacks of reprints of the past for this same reason, and to minimise the risk of fire if my house gets set alight. The money I don't spend on them goes into savings, like my wife saves 10*s.* 6*d.* every time she doesn't buy that attractive new hat. A putty medal would meet the case, I think, for the Minister of Supply doesn't seem to care about putty.

* * *

E. F. Benson's last book, "Final Edition," published after his death, deals largely with his own family and will interest medical readers. The father, Archbishop Benson, we are told, suffered from fits of intense depression but at other times was a dynamic personality. Mrs. Benson was a lake of placidity and commonsense, qualities which no doubt the Great Eugenist made attractive to—and attracted by—the cyclic nature of her husband. The four children who reached adult life were all gifted in two ways that are so often mutually exclusive, in scholarship and in imagination, in word-proficiency and visual imagery, and seem to have had a Mendelian ratio of predestiny. A. C., Eton master and Master of Magdalene, was a prolific writer and among much else left a diary of four million words which was not to be published for 50 years, although he was completely inactive in nursing-homes during long periods of depression. E. F. seems to have most nearly resembled his mother, but suffered from arthritis for the last 20 years of his life. How often does a bodily complaint, especially a painful one, seem to be a variant of—or indeed a counter irritant to—a faulty mental gene! The sister Maggie after showing early brilliance was certified, while Hugh, Roman priest and author, died of angina comparatively young, and we do not know how he would have stood the testing years and male climacteric even in his self-sought sheltered calling. We are told that he never set much store on human relationships, and I think that this book too could not have been written by one with ordinary emotional endowment; at any rate what is probably protective emotional atrophy seems to have sterilised this generation of Bensons as effectively as the most ardent eugenist could desire. This book has left me chewing over problems. Is all skilled, sustained work at fever heat done by hypomanics? If I had the choice should I dare to be one of these gifted, menaced people? Unlike the bees whose leaders breed while the workers are sterile, in man is it the function for the workers to breed, while the leaders, in thought at any rate, tend to sterility? Is this a levelling process? Be these things

as they may, the Bensons' work endures; many a poor scholar will benefit from A. C.'s writing—an unknown reader sent him over sixty thousand pounds to do what he liked with, a fascinating story that—and I venture to prophesy that since human minds are ever and inordinately delighted by little things, like Jane Austen characters modernised to our time, the figures of Miss Mapp and Lucia with their shopping baskets will glide cattily and smile-provoking and unageing through the cortical corridors of our great-grandchildren.

* * *

Ye'd say (if you were Irish) that a man 'ud have enough trouble with the war itself without having to do simultaneous battle with the elements. During a recent tempestuous afternoon I noticed the dustbin rolling drunkenly round the garden. While we were having tea we were appalled to see our chicken-house blown flat. Reluctantly but gallantly I went to the help of my wife who wanted to set it up again. Obviously this could only be done on the leeward side of the house. Taking up one of the walls I tried to carry it but the wind catching it as it might have been a sail spun us both round and toppled us over. What, I wondered to myself as I rose dizzily to my feet, happens to sandwichmen in a high wind? Finally we had to drag roof and walls into a sheltered place only to find, to my relief I may say, that several vital planks were fractured and that the house could not be re-erected until these had been repaired. The domestic fowl is a conservative bird. If accustomed from an early age to roost in a certain place she expects to do so for ever whether or no there is a roof over her head. We watched a dozen disconsolate pullets growing comatose, as they do at roosting-time, standing around the old site as if waiting for an imaginary pub to open. Attempts to herd them into temporary quarters in the garage caused them to scatter wildly in the gathering dusk. All the corn and clucking noises in Egypt wouldn't bring them together again so there was nothing for it but to hunt them up one by one in the dark and rain with a pocket torch. We found them in the most unexpected places. Two had concealed themselves in the front porch and pecked me savagely before being captured; another was perched morosely on the handlebars of my daughter's bicycle and a third had climbed into the bitch's basket, much to the astonishment of the puppy who could make nothing of this strange bedfellow. One wise old virgin had secured a warm and sheltered position on top of the wood-heap, where we let her bide. Most of those discovered surrendered without a struggle and allowed themselves to be carried across the garden and set down gently on improvised perches. Wisely we did not count our chickens until they were cached and found that all but three could be accounted for. These must have spent an uncomfortable and sleepless night in the lavender hedge but turned up looking a bit red-eyed and indignant in time for breakfast next morning.

* * *

Mention of a colleague's efforts as a veterinary surgeon (by the way wasn't this illegal?) prompts me to tell my cat story, which I have often inflicted on dinner-party neighbours only to receive incredulous gurgles. We possessed at the time a fine half-Persian lady, very wild when we took her over from a convent where her annihilation of the poultry proved resistant to all the power of prayer. I had several times removed bones stuck in her mouth and was always surprised at her docility on these occasions. Moreover "her career of unbridled motherhood," as Elizabeth of garden fame has put it, had afforded me some obstetric experience and plenty of opportunity for observation in comparative pædiatrics. In other words she never minded my messing about her kittens however young. One day there was a mew at the door and there she was—with a friend. Both entered and rubbed against my legs as a sign of greeting. The friend had a nastily infected eye. This I proceeded to bathe and after a dish of milk the patient retired, returning daily for the irrigation until the eye was well again. Then he disappeared. Now all the cats of the road were well known to us and the patient was a stranger. My theory is that our lady met him one day in his unhappy state and mentioned that she knew a "mend man" who would soon put things right. So with this encouragement the ophthalmic patient came along for treatment. No-one ever believes this story, but it happens to be true.

* * *

I was sorry to miss Señor Don Octavio Señoret's luncheon at the Chilean Embassy to the well-wishers of the two Chilean medical scholars attracted here by the British Council. Their high courage in making the long, tedious and dangerous journey in these days suggests a most gratifying faith in British medicine. Dr. Orlando Poblete is specially interested in traumatic surgery, of which one can only hope he may not find a surfeit. Dr. Alberto Gallinato we could have wished had been with us in more settled times when postgraduate teaching is more orderly, but if he is willing to probe he will find much hidden metal.

Parliament

FROM THE PRESS GALLERY

School Meals in Scotland

Mr. J. HENDERSON STEWART sought to grasp the nettle of legislation by reference in his three drafting amendments to the Education (Scotland) Bill which was considered in committee on Jan. 20. His amendments proposed the repeal of the Scottish Education Act of 1913 and the incorporation in the new act of its power to provide medical treatment for needy children. But the deputy chairman, Colonel Clifton Brown, ruled that an amendment dealing solely with provision of medical treatment of children was outside the scope of the present bill and therefore out of order. Baulked at his first attempt Mr. Henderson Stewart returned to the charge with another amendment, no less than to make the provision of clothing and food part of the educational system of Scotland. He moved to leave out the section of the bill empowering an education authority to recover from parents who cannot afford to pay the cost of the food and clothing supplied to the child. Mr. G. M. GARRO JONES and Mr. T. MAGNAY supported the amendment, if not each other. But Mr. T. JOHNSTON, secretary of state for Scotland, said that if we could feed all the children there was a lot to be said for defraying all the cost. But we had neither the equipment nor staff to feed more than about a quarter of the children. He looked forward to the day when we could develop our nutritional facilities but this bill only set out to abolish the long and humiliating rigmarole of procedure that must at present be followed before the necessitous child is fed, and to see that after feeding these needy children our communal feeding centres were used to the maximum of their ability by the other children whose parents can pay in whole or part for their meals. The bill finally passed through committee without amendment—perhaps because so many argumentative Scots were marooned in their own country. But it was a pity they were "unavoidably prevented" from taking part in this discussion which showed our desire to do as much as we can for Scottish children today and even more tomorrow.

QUESTION TIME

Rehabilitation of the Disabled

Replying to a question Mr. ERNEST BEVIN said: The interim war-time rehabilitation scheme which I announced on Oct. 23, 1941, is progressing satisfactorily and the Government have now decided in principle on two further developments. First, as an immediate war-time measure, they propose to provide for the rehabilitation and training for employment of disabled persons who are not provided for by the interim scheme. Second, they have decided to prepare as soon as possible comprehensive measures for the rehabilitation, training and resettlement of disabled persons generally, for introduction as soon as possible after the end of the war. Both these schemes will make provision for disabled persons of all categories, irrespective of the cause of their disability. The Minister without Portfolio and I are now engaged in consultation with the other ministers concerned in an active investigation into the best means of carrying these decisions into effect.

Mr. H. BROOKE asked the Minister of Health whether there were any arrangements under the Emergency Hospital Scheme whereby seriously injured persons, after leaving hospital, can obtain further specialist treatment or supervision

which they required.—Mr. E. BROWN replied: Apart from the general provision for enabling air-raid casualties and civil defence workers injured on duty to obtain all necessary further medical treatment either at an outpatient department or from a general practitioner, special arrangements have recently been made for following up certain types of injury amongst those patients as well as ex-Service patients where the process of recovery is usually prolonged and needs to be supervised. I am advised that the cases where this procedure is particularly desirable are those treated in special centres which involve peripheral nerve injury, head injury or chest injury, as well as plastic and jaw cases and certain types of orthopædic cases. The follow-up will be carried out by asking the patients to come up from time to time for re-examination, and, if necessary, further treatment, either at the original centre or at one more convenient for his place of residence, and by keeping careful records of his progress in a standard form as advised by the appropriate consultant adviser. I am issuing a circular to hospital authorities on this matter. The special organisation already set up for dealing with fracture and orthopædic cases was described in the reply which I gave on Jan. 8.

Hospitals and the National Loaf

Sir ERNEST GRAHAM-LITTLE asked the Minister whether he would indicate the date, and the terms of the instruction, upon which the hospitals under his control had adopted national wheatmeal bread; and whether, before issuing this instruction, he ascertained that the loaf, the consumption of which at the hospitals was thus enforced, was prepared in accordance with the directions stipulated by the Medical Research Council.—Mr. BROWN replied: No instructions have been given in this matter by my department to any hospital but certain recommendations were made to local authorities and to voluntary hospitals in the Emergency Hospital Scheme, in circular 2407. No independent analysis of the bread to be supplied to such hospitals was made by my department.

Supplies of Vitamins

Captain G. S. ELLISTON asked the Parliamentary Secretary to the Ministry of Food whether considering the importance of vitamins in modern medical treatment he would remove his restrictions on the use of these products for pharmaceutical purposes.—Major G. LLOYD GEORGE replied: There are no restrictions on the use of vitamins B_1 and D for pharmaceutical purposes. Vitamin A is still available in reduced quantities for pharmaceutical purposes. It is not possible to increase the present supply owing to the large demands for this vitamin for the fortification of margarine. As regards vitamin C there is no restriction on the use of ascorbic acid for tablets and other "straight" preparations. There is however a voluntary restriction with the manufacturers whereby pharmaceutical manufacturers of proprietary brands of multi-vitamin preparations are allowed supplies of ascorbic acid on the basis of their average usage in the first five months of 1941 prior to the introduction of the vitamin C control order on June 2. This restriction has been imposed by the Minister of Food with the agreement of the Minister of Health, on the recommendation of the special diets advisory committee of the Medical Research Council.

Provision of Nurseries

In answer to a question Mr. BROWN said: At the end of December 223 day nurseries were in operation in England and Wales; 313 more were approved but not in operation, and 267 were in preparation.

Replying to a further question Mr. BROWN added: In the London region 20 whole-time nurseries with accommodation for 828 children are in operation; 44 more with accommodation for 1911 children are approved and will shortly be open. A further 92 nurseries are in preparation. Figures of attendances are only available at present for 11 nurseries, which have been open for some months. In these nurseries there are 406 places and the average attendance at the end of December was 308.

In Manchester, 1 war-time nursery is open and 6 others are proposed. In the rest of the county of Lancaster (including the county boroughs), 18 nurseries are open, a further 24 have been approved, and 16 more are under consideration by the authorities. Both in Manchester and in the rest of the county a large number of children under five attend nursery classes in public elementary schools. (Miss F. HORSBURGH replying to Mr. R. DUCKWORTH.)

Children in Tube Shelters

On the night of Jan. 19, 1942, there were 398 children under fourteen sleeping in tube stations used for traffic and 183 in other tube shelters. (Mr. BROWN replying to Lady ASTOR.)

Diphtheria Statistics

Mr. BROWN informed Mr. S. P. VIANT that the number of deaths from diphtheria per million children under fifteen years of age was 306 in 1938, 227 in 1939, and 265 in 1940.

Typhus in Eastern Europe

Sir FRANCIS FREMANTLE asked the Secretary of State for Foreign Affairs if he had now any information as to the prevalence of typhus, otherwise known as camp or jail fever, on the Russian front and in eastern and south-eastern Europe.—Mr. A. EDEN replied: The information in my possession indicates that there has been a marked increase of typhus on the German side of the Russian front and in eastern and south-eastern Europe. No statistics of the number of cases can be obtained.

Sir E. GRIGG, under-secretary to the War Office, replying to a question, said that special measures had been taken to protect our troops in the Middle East against the possibility of an extension of the typhus epidemic outside Europe. The measures already taken included arrangements for the supply of vaccine and the setting up of additional laboratories for diagnostic purposes in the Middle East.

Quarantine and Man Power

Mr. L. SILKIN asked the Minister of Health whether his attention had been drawn to the results of investigations carried out by the medical officer of health to the Post Office,[1] in connexion with quarantine rules in respect of infectious diseases, which proved that the existing rules of quarantine involved unnecessary idleness, and therefore imposed a needless loss of healthy man-power; and whether he would bring these conclusions to the notice of industry and to all medical officers of health.—Mr. BROWN replied: The conclusions referred to are in general accord with the advice which my department has given for years past when guidance on the subject has been sought. My medical advisers and those of the Board of Education have recently given the matter further consideration, and I hope that very shortly the two departments will issue to local education authorities a schedule recommending revised periods of exclusion from school of patients suffering from infectious disease or their contacts. As regards industry, I am in communication with the Minister of Labour and National Service.

Army Dispensaries

Mr. W. W. WAKEFIELD asked the Secretary of State for War if he was satisfied with the regulations in force in the Army in connexion with the dispensing of medicines and the safe custody and proper labelling of poisons and dangerous drugs.—Sir E. GRIGG replied: Fresh instructions calling attention to the regulations on this subject have recently been issued. A simple notice on the care, custody and administration of poisons and dangerous drugs will be posted in a conspicuous position in all medical establishments.

Domestic Staffs in Hospitals

Mr. DAVID ADAMS asked the Minister of Labour whether, in view of the difficulty of retaining members of the domestic staffs at various hospitals in the kingdom, it was intended to apply to these the Essential Works Order.—Mr. BEVIN replied: After consultation with the Minister of Health, I am not satisfied that this would in present circumstances be an appropriate method of achieving the object in view.

1. See *Lancet*, 1941, ii, 739.

WHO'S WHO IN 1942.—The paper shortage which has given so many annual publications a wasted look has had no visible effect on "Who's Who" (London: Adam and Charles Black. Pp. 3452. 70*s*.), which appears again as portly and informative as a beadle. And no wonder, for war gives us an opportunity to find out the qualities of people, and "Who's Who," always generous to merit, spreads its red covers to embrace them. This friend of the distinguished is welcome again to our shelves in its latest incarnation.

Letters to the Editor

MEDICAL PORTRAITS

SIR,—The council of the Royal College of Surgeons of England wish to bring up to date the large collection of portrait-engravings and photographs of medical men which has been formed in the college library in the course of years. May I, through your columns, appeal to all fellows and members of the college and assure them that gifts of their photographs will be very gratefully appreciated by the president and council, and will be duly acknowledged if sent to the librarian at the college.

Royal College of Surgeons, Lincoln's Inn Fields, W.C.2. W. R. LE FANU, Librarian.

GINGIVITIS IN THE FORCES

SIR,—In view of the present incidence of gingivitis in the forces and civilian population, it might be of value to make known some preliminary impressions based on over 50 cases admitted to hospital.

Our investigations of ascorbic-acid excretions indicated vitamin-C subnutrition in an important proportion of our cases of gingivitis, and at the stage at which we saw our cases there was almost invariably an associated gingival sepsis. Gum and throat swabs seldom revealed a Vincent's infection. *Streptococcus viridans* and non-*viridans*, and *Staphylococcus albus* and *aureus* were usually reported. The bacterial invasion of gums produced a septic gingivitis or septic gingivo-stomatitis. On admission, the vast majority of our cases had turgid, hæmorrhagic, painful and infected gums with a fœtid purulent discharge at the gum margins. It was apparent from the case-histories that the initially swollen and bleeding gum, with its lowered resistance, had soon become infected where treatment was delayed. Recovery is greatly expedited by immediate local and vitamin therapy. Where diseased teeth were present there was a maximal gum lesion around them, and at the site of malplaced, unerupted or partially erupted wisdoms there were often well-marked radiating tenderness, ulceration and an area of stomatitis.

In view of the demonstrated vitamin-C deficiency in a number of our cases, it is our practice to administer large doses of vitamin C and immediately to institute local treatment. With test doses of ascorbic acid, employing the dichlorophenolindophenol titration method of estimation, we have found ascorbic deficits of the order of 2000–4000 mg. or more. The following dosage is then suggested where the exact requirements of the patient cannot be ascertained. During the first week, three 50 mg. tablets of vitamin C. t.d.s.; during the second week, one or two tablets b.d.; and thereafter, one tablet daily. Although these are adequate for subscurvy, where a more advanced scorbutic condition exists, or where there is pyrexia, larger doses might be required. Our cases did not show clinical evidence of generalised scurvy, nor were they pyrexial. Apart from biochemical assay, investigations for scurvy proved negative.

The usual local treatment consists of the twice daily application of chromic acid, copper sulphate, or some arsenical preparation in suitable strengths. We have found gentian violet 2% in normal saline particularly effective, though unsightly. The preparation must be applied to the interdental spaces by soaking pledgets of cotton-wool in the solution and probing them into these spaces where possible. Potassium chlorate lozenges, mouth-washes before the applications to the gums, and arsenical injections may of course be given. Dental extractions considered necessary should be deferred until any gross lesion has subsided.

A study of the diets of individual patients sometimes in itself suggests a lack of vitamin C. On the whole, adequate vitamin-C containing foods seem to be available in the army dietary, but they are not necessarily consumed in sufficient quantities. Moreover, a few of our patients fed in civilian billets and their diets were not satisfactory. The considerable majority of our patients declared that their intake of vegetables in the army was less than their consumption in civil life, quite apart from the absence of fruit.

Vitamin-C insufficiency in our cases may of course be merely the reflexion of a more universal low nutritional level. That low ascorbic values are by no means confined to cases manifesting gum lesions was evident in our vitamin-C evaluations of soldiers with no apparent gingival disease or clinical suggestion of scurvy. It would be of interest to assess the vitamin-C nutritional state of members of the forces in general, with a survey of factors which are relevant to the vitamin-C content of their food, such as the freshness and methods of cooking vegetables. Should an increase in vitamin-C consumption be indicated, the most satisfactory remedy would appear to be antiscorbutic tablets, but it is unlikely that the pharmaceutical houses could meet such a demand at present.

Attention has been drawn to the possibility of subscurvy in patients who do not respond to treatment of wounds and septic states; this should also be borne in mind.

FREDERICK STUHL.
Birmingham. JAMES B. COVENTRY.

GLANDULAR FEVER WITH JAUNDICE

SIR,—Dr. Carter and Dr. Gold have added two more to the reported cases of glandular fever with jaundice (*Lancet*, Jan. 24, pp. 102, 103). Since describing my own two cases (*Ibid*, 1941, ii, 480), I have seen 3 more cases of glandular fever in each of which bile was passed in the urine although skin jaundice was absent. The bile was passed over 3–4 days during the pyrexial stage while glands were enlarging. The diagnosis in each case was confirmed by a positive Paul-Bunnell reaction. Although frank jaundice is uncommon in glandular fever probably daily testing of the urine would quite often reveal latent jaundice; if this proves to be true the finding of bile in the urine might become an accessory diagnostic factor.

Cambridge. LAURENCE MARTIN.

NEUROSIS SIMULATING MENTAL DISORDER

SIR,—In addition to the considerable interest of its topic, two other qualities appealed to me in the article by Dr. Cook and Dr. Sargant in your issue of Jan. 10 (p. 31). It was brief and it was very readable. But if the authors had added another short paragraph giving some additional details arising out of the informative material they discussed it would have increased, at least for me, the interest and value of the paper. Can they, please, let us know how many diagnostically doubtful cases there were in the original group selected? What were the ages and diagnoses of the eight cases sent to the neurological centre for treatment and also of the two cases returned to their units?

Harley Street, W.1. FREDERICK DILLON.

FUTURE OF MEDICAL RESEARCH

SIR,—Dr. Walther, in his article of Dec. 27, states his view that "there is no special virtue in whole-time research work" and suggests "a part-time arrangement whereby anybody being paid by the state . . . should be allowed sufficient spare time to do research if the facilities exist for it." This suggestion, for me, has not a practical ring and indeed seems nebulous. To estimate the special virtues of whole-time research would require a survey of the outstanding discoveries made in medicine and its allied sciences, and the conditions under which they were made. I believe that the type of mind which is genuinely and primarily interested in research, desirous of pursuing it, and which shows at least a spark of originality is decidedly rare. These rare men, selected by a body like the Medical Research Council, should in my opinion be secured for whole-time research and their livelihood assured. One has seen this type caught up in administration and routine hospital duties, striving to do some research work in spare time: a pathetic spectacle. Such men are dogged by a sense of frustration. Dr. Walther further suggests the "organisation of teams of general practitioners, with the use of laboratory facilities, to carry out research on minor ailments." This, I think, requires elaboration and illustration. These overworked men would surely have to be relieved of their work for quite an appreciable time and would need training before they could put to proper use laboratory facilities. I think the views of general practitioners are needed on this suggestion. One of the most useful

functions of this large class would, in my view, be the recording of personal and family histories of patients, with the aid of trained social-service workers. The views I hold on compulsion in this matter are not at present acceptable. But I am sure that in the future the subject of personal and family histories of all and sundry must be squarely faced and fully dealt with, with the resulting conclusions and consequences; otherwise there can be no fundamental prevention of disease.

Hove. EDWIN GOODALL.

SULPHONAMIDES AND ENTERIC FEVERS

SIR,—In my annual report for 1937 I wrote that "paratyphoid B appears to be favourably influenced by sulphonamide, but this drug has very little effect in typhoid fever." The drug used then was sulphanilamide. Subsequently sulphapyridine has been tried. These drugs are not effective against enteric organisms in the same way that they are against streptococci, pneumococci and meningococci; but the fact that paratyphoid B does appear to be favourably influenced suggests that a member of the sulphonamide series may yet be produced which is really useful in enteric infections. Paratyphoid B patients often begin to recover as soon as they come under hospital treatment, and charts such as the one reproduced last week (p. 104) are not uncommon in the absence of specific treatment. Again, abortive cases of typhoid fever and of paratyphoid B are not very rare, and probably are quite often missed. Temporary excretors are very common in both diseases. They generally clear up sooner or later no matter what line of treatment is pursued. A minority persist to become true carriers.

These facts make it difficult to assess the value of drugs, but from my own observations I am convinced that the sulphonamides have no effect upon either the temporary excretors or the true carriers. The former clear up automatically, the latter remain an unsolved problem and a menace.

Exeter. G. B. PAGE.

VOLPAR PRODUCTS

SIR,—Dr. Marie Stopes assumes that mercuric chloride and phenylmercuric acetate (the active principle of the 'Volpar' preparations) are substances with similar properties, and she makes the suggestion that pathological effects might be produced by volpar similar to those resulting from the accumulation of inorganic mercury compounds in the body.

Actually the only point of resemblance between the two substances is that they both contain mercury. The organic compounds of mercury are quite different in their reactions with living tissues from the inorganic, of which mercuric chloride is an example. This substance is, of course, a violent protein precipitant. Poisoning by inorganic mercury compounds results either in the chronic symptoms of salivation, swollen gums, loosening of the teeth, abdominal pains, muscular tremor and exhaustion, or else in acute symptoms with necrosis of the glomeruli and uriniferous tubules and serious damage to other parts of the body. A woman who used a vaginal douche containing about 7 grains of mercuric chloride suffered the usual symptoms and died, with glomerulo-tubular nephritis and suppression of urine (Russell, B. *Brit. med. J.* 1934, i, 756). Phenyl and tolyl mercury compounds have been manufactured in large quantities for use in seed dressings, but no pathological effects due to their absorption into the body have been recorded. There have been a few instances of slight local effects on the skin, but one can hardly compare the large quantities of the solid compounds handled in the manufacture of seed dressings with the minute traces of one of them present in very dilute solution in the volpar products (0·06% in the gels and even less in the paste).

The two most spermicidal substances known are phenylmercuric acetate and phenylmercuric nitrate, the one being the first in the list in weakly acid solution and second in weakly alkaline solution, and the other vice versa. These substances greatly exceed in spermicidal power all the violently poisonous substances, mercurial and non-mercurial, which have been tested on spermatozoa. Despite its enormous spermicidal power, phenylmercuric acetate is a remarkably harmless substance to mammalian cells other than spermatozoa. During years of research my colleagues and I took no precautions when handling solid phenylmercuric acetate, but we never suffered any ill effects; nor has anyone concerned in the manufacture of the volpar products been affected in any way. Further, phenylmercuric acetate and the volpar products have been submitted to thorough test for possible corrosive action, and it has been shown by repeated histological investigations that volpar has no harmful effect upon the delicate membrane of the vagina. The results of these investigations have been reported, and they have been confirmed over and over again in the routine use of volpar during several years.

Department of Zoology, Oxford. JOHN R. BAKER.

*** We have received other letters emphasising the harmlessness of organic mercurial compounds in the doses stated. Dr. Marie Stopes has written to say she would attach little scientific value to an individual test of volpar by the mouth as human variability is very great.—ED. L.

PLASMA IRON

SIR,—The writer of the annotation of p. 81 of your issue of Jan. 17 appears to be unaware of the fact that I published a method for the determination of iron in blood plasma in 1934 (*Biochem. J.* **28**, 1160) which gave results almost identical with those of Vahlquist which he quotes. This method was similarly overlooked by the writer of a leading article on the same subject in the *British Medical Journal* in 1938 (i, 455). Yet the method, unlike the one outlined in your annotation, does not employ apparatus outside the usual range of laboratory equipment.

School of Medicine, Leeds. F. S. FOWWEATHER.

REGISTRATION OF ASSISTANT NURSES

SIR,—Like Dr. Carling I am anything but satisfied with the conditions offered to the nursing staff in some hospitals. But a student nurse in an approved training school can hope for much better conditions than an untrained employee in an institution which is not a training school. Such institutions, Dr. Carling will agree, should not be allowed to obtain cheap labour and to offer the public unskilled nursing by employing so-called probationers who, when they have completed the course for which they are paying (not in fees but labour), are no nearer a nursing qualification than they were at the start. Non-training institutions should surely be staffed by trained nurses, aided where necessary by assistant nurses who have been given a recognised training and enrolled as such.

The Athlone Committee recognised that the nursing services of the country must have the aid of assistant nurses; and there is urgent need for the measure of State control which would be achieved by placing these nurses on a register or roll. The committee held that the most suitable body to keep such a Roll of Assistant Nurses would be the General Nursing Council, and that if the powers conferred upon the G.N.C. by the Nurses' Registration Act, 1919, were too limited for this purpose they should be extended by suitable legislation. It has been found possible to implement other recommendations of the Athlone Committee: even in time of war is it too much to hope that a measure as urgently needed as this will be effected? It would be in the interests of the public and of the nursing profession, as well as of the assistant nurse herself whose services are now used while her position remains precarious.

In reply to Dr. Carling's inquiry as to what proportion of girls seeking hospital employment have ever heard of "an advisory body in London," I am glad to say the Nursing Recruiting Centre at present deals with over 500 applications a month, and a count of a substantial cross-section shows that 75% of these applications come from the provinces. Many of the candidates are interested in local opportunities and are put in touch with training schools in their own county. Though the centre founded by King Edward's Hospital Fund is in London, the coöperation of the Nuffield Provincial Hospitals Trust has made it possible to extend its services to the provinces.

MURIEL M. EDWARDS.

Nursing Recruitment Centre, London.

Public Health

Health of London in 1940

IN place of the library of stout volumes which make up the annual report of the medical officer of London county, Dr. Allen Daley furnishes for 1940 an interim statement of 16 pages, but it contains information which is not only interesting but surprising. One would have expected the vicissitudes of 1940 to be reflected in London's vital statistics, but they show little change. The birth-rate was 15 against 13; infantile mortality-rate 48 against 47, and neonatal mortality 22·4 against 22·5. Dr. Daley does not estimate population nor its general death-rate, but the number of deaths allocated to the county was 57,459, of which 48·6% were of females. The number of births was 46,213, so the general death-rate (if based on the same population) would be about 19·3. Pulmonary tuberculosis caused 2687 deaths against 2650 in 1939, increasing the mortality of that disease from 0·7 to 0·87. The reduction of primary notifications of all tuberculosis from 5496 in 1939 to 4979 in 1940 probably reflects the reduction of population (4,062,800 in 1938). The following case-mortality rates arrest attention: measles 0·75 per 1000 notifications; whooping-cough 6·5 per 1000; scarlet fever 2 per 1000; and diphtheria 36 per 1000. Cerebrospinal fever has 839 notifications with 151 deaths, encephalitis lethargica 8 with 48 deaths—no increase in the latter for the present. There has been no smallpox in London since 1934 and no typhus. Cancer mortality was 2140 per million. Milk samples examined for tubercle showed 9% positive. Tuberculin-tested milks gave no positive results, but in accredited milk the percentage containing bacilli was 13·8 and in ungraded milks 8·1. Most of London's milk of course is pasteurised; is it not time that all of it was? The percentage of children returned at school medical inspection as having nits or worse in their hair is given as 3·1 against 2·3 in 1938; London is suspect of having a lenient standard. Rickets increased in school entrants from 1 to 1·5% in boys and from 0·4 to 1·2% in girls; but this can hardly be attributed to war-time conditions, for these children would be five-year olds.

New York's Health Defences

Since 1937 the formal annual reports of the commissioner of health of New York City have been replaced by an attractive book which, though not on sale, is available to the general public through all libraries. The health services of New York are in the hands of a commission of five, four of whom are doctors, with the commissioner, Dr. John L. Rice, as permanent chairman, while the mayor, Fiorello H. La Guardia, though not a member of the commission, has been responsible for many of the dramatic changes in the health organisation and is likely to have had much say in bringing the annual report to life. Each report has a new title, and 1940's, edited by Mr. Savel Zimand, is called "Twelve Months of Health Defense." The reports seek to interest the citizen in the technique of health administration, and their success has been remarkable. New Yorkers are not only blest with the finest health service in the world, but share in its working. Though the reports are now read by the many they are also studied by the few. Experts continue to find in them all they want to know about the health of the population, and the reports have come to rank among the chief guide books to the development of hygiene.

This was a census number and the population of New York on April 1, 1940, was 7,454,995, an increase of 524,549 since April 1, 1930. The change in age-distribution has been great. In 1930 people under 15 years of age formed 30·7% and those over 65 years 2·8% of the population. In 1940 the percentage of children under 15 had sunk to 19·8 and that of persons over 65 risen to 5·5. In 1940 the birth-rate was 14·4, the highest since 1933, and the number of babies born 107,287, the highest since 1932. Of these births 105,938 were attended by physicians and only 1311 by midwives; 101,141 took place in institutions. In 68,616 there was no operative interference; in 9759 episiotomy only. There were 2716 cæsarean sections, only 188 high-forceps operations and no craniotomies. The general death-rate was 10·2, the same as in 1939, the lowest on record except for 10 in 1938. Infantile mortality was 34·9 and puerperal mortality 2·73. The chief causes of death were: heart disease, 34·9% of all deaths; cancer, 16·2%; accidents, 16·2%; cerebral hæmorrhage, &c., 5·1%; tuberculosis, 4·8%; and pneumonia, 4·5%. Since 1900 the crude death-rate of all ages has fallen from 20·1 to 10·2. The decrease in the mortality of preventable diseases has been dramatic: infantile diarrhœa fell from 164 per 100,000 population in 1901 to 3·3 in 1940; diphtheria from 58·2 to 0·1; pulmonary tuberculosis from 229 to 44·5; pneumonia from 258 to 45·7. The only important increases were in heart disease, which rose from 141 to 355; cancer from 69·3 to 165; and diabetes from 14·2 to 41·6.

Pneumonia is a formidable problem in America, and research on this disease is a feature of New York's health service. During 1940 13,808 cases of pneumonia with 3410 deaths were registered, giving a fatality of 24·7%, the lowest so far obtained, and 4211 specimens of pneumococcus were typed. Of these 12·8% were type III; 7·6% type I; and only 2·7% type II, which came tenth in order of frequency. Types other than the 32 formerly recognised occurred in 8·7%. In 27% of the sputa received no significant organisms were discovered; hæmolytic streptococci were present in 3·6%; staphylococci in 0·5%; and Friedländer's bacillus in 0·4%. A note of importance to physicians is: "The presence of antibodies, even in minimum amount, was found essential to the therapeutic action of sulfapyridine in pneumococci infections. Therefore, good results in the treatment of pneumonia caused by any type of pneumococcus could be anticipated if a group specific serum with a low protective potency was used together with the sulfapyridine."

Infectious Disease in England and Wales

WEEK ENDED JAN. 17

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1047; whooping-cough, 1601; diphtheria, 1013; paratyphoid, 8; typhoid, 24; measles (excluding rubella), 896; pneumonia (primary or influenzal), 1028; puerperal pyrexia, 162; cerebrospinal fever, 177; poliomyelitis, 6; dysentery, 128; ophthalmia neonatorum, 61. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Jan. 14 was 1324, including scarlet fever, 128; diphtheria, 266; measles, 32; whooping-cough, 509; enteritis, 59; chicken-pox, 42; erysipelas, 29; mumps, 40; poliomyelitis, 1; dysentery, 18; cerebrospinal fever, 20; puerperal sepsis, 15; enteric fevers, 4; glandular fever, 1; other diseases (non-infectious), 75; not yet diagnosed, 85.

Deaths.—In 126 great towns there were 1 (0) deaths from enteric fevers, 1 (0) from measles, 2 (0) from scarlet fever, 16 (6) from whooping-cough, 33 (1) from diphtheria, 33 (2) from diarrhœa and enteritis under 2 years, and 62 (15) from influenza. The figures in parentheses are those for London itself.

Birmingham reported 1 death from an enteric fever. Birmingham had 6 fatal cases of influenza, Manchester 4. There were 4 deaths from diphtheria at Liverpool.

The number of stillbirths notified during the week was 229 (corresponding to a rate of 44 per thousand total births), including 12 in London.

VOLUNTEER TO BE A NURSE.—Nursing is not included in the list of "options" from which women who are called up under the National Service Act are asked to choose because volunteers for nursing are put in a special position, in much the same way as men volunteering as pilots or observers in the R.A.F. But the ministries of Health and Labour wish it to be known that all women who come under the act, or the Registration for Employment order, may choose nursing at any stage before they receive their notice to report for duty. They may apply at any employment exchange, at the local hospital, or to the medical officer of health in the nearest county town or county borough, or they can write to the Nursing Division of the Ministry of Health, Whitehall, London, S.W.1, giving the number of their national registration identity card.

Medical News

University of Wales

At recent examinations the following were successful :—

D.P.H.

Part I.—Dilys L. Davies, Freda M. O. Graham, Aelwyn Griffiths, Mary D. Owen and Margaret R. Wade.

Part II.—R. W. Thomas.

Scottish Conjoint Board

The following having passed the final examination of the board have been admitted licentiates of the Royal Colleges of Physicians and Surgeons of Edinburgh, and the Royal Faculty of Physicians and Surgeons of Glasgow :—

Bernard Barnett, H. L. Cahn, Peter Capaldi, J. B. Donald, E. M. N. Dunlop, William Forster, Pamela P. Griffith, C. L. Gunn, J. H. Hilditch, John Hothersall, Israel Hurwitz, Ivan Joffe, J. R. Kyles, H. J. Modlin, A. F. Morgan, Albert Mackie, Malcolm Niven, E. A. Novick, W. A. Ogilvie, Michael Rapoport, A. O. Stein, H. N. Stein, A. B. Stewart, G. P. Toh, Margaret O. Withof-Keus and Leo Wollman.

Luise Wislicki, a graduate of Berlin, a recognised foreign university, was also admitted to the licentiateship.

Medical Casualty

W.S/Captain A. B. Waters, M.R.C.S., R.A.M.C., has been posted as wounded.

Medical Honours

The M.C. has been awarded to Captain Leonard Bapty, M.B. Aberd., R.A.M.C., and Captain J. B. Heycock, M.R.C.S., R.A.M.C., for gallant and distinguished services in the Middle East.

Captain Heycock was taken prisoner near Sidi Rezegh. All through the night he attended to the wounded and in the morning after a counter-attack by our tanks, he loaded the wounded into a German ambulance and forced the driver to proceed to our lines.

Pharmaceutical Society of Great Britain

On Wednesday, Feb. 11, at 2.30 P.M., at 17, Bloomsbury Square, London, W.C.1, Dr. Philip Hamill will read a paper to this society on prescribing in war-time.

Association of Applied Biologists

At a meeting of this society, to be held at 11 A.M. on Friday, Feb. 20, at the London School of Hygiene, Keppel Street, W.C.1, there will be a symposium on domestic entomology, when recent work on the bed bug, head and body lice, and scabies will be discussed. Visitors will be welcome.

Royal Sanitary Institute

A meeting of this society will be held at Salford on Feb. 14 when Mr. J. A. Webb, chairman of the city health committee, will open a discussion on post-war public-health problems. Mr. W. Albert Walker, the city engineer, will also speak on post-war housing development, Mr. G. H. Walker, the city analyst, on food substitutes and public health, and Mr. S. Stott, food-sampling officer, will describe his experience of the working of the Food and Drugs Act, 1938.

Death of Henri Carrière

Dr. Carrière, late director of the Federal Service of Public Health, died at Berne on Dec. 24. He had represented Switzerland on the Permanent Committee of the International Office of Public Health in Paris for many years.

Royal Society of Medicine

A general meeting of the fellows of this society will be held at 3.30 P.M. on Tuesday, Feb. 3. On Feb. 4, at 2.30 P.M., Dr. J. D. Rolleston will read a paper to the section of the history of medicine on the folklore of the acute exanthemata. On the same day, at 2.30 P.M., at the section of comparative medicine Mr. H. T. Matthews, F.R.C.V.S., Mr. R. F. Montgomerie, PH.D., and Mr. H. H. Green, D.SC., will open a discussion on the control of tuberculosis in cattle. On Feb. 6, the section of otology will meet at 10.30 A.M. when Dr. R. T. Brain will open a discussion on skin diseases of the ear. At 2.30 P.M., on that day, at the section of laryngology, there will be a discussion on throat and nose manifestation of blood diseases, when Mr. W. M. Mollison and Dr. R. G. Macfarlane will be the opening speakers. At the same hour Dr. Geoffrey Organe will read a paper to the section of anæsthetics on resuscitation.

Royal Institution

On Thursday, Feb. 12, at 2.30 P.M., Mr. C. H. Waddington, Sc.D., will deliver a lecture at the institution, 21, Albemarle Street, London, W.1. He will speak on some biological discoveries of practical importance.

Status of WAAF Doctors

A recent Air Ministry order has authorised WAAF medical officers to attend men as well as women, and has granted them equal status as regards seniority and rank with their colleagues in the R.A.F. Medical women in the service will now be posted to R.A.F. stations where men and women are employed and will be eligible for appointment as station senior medical officers.

Lectures at Nuffield Department of Surgery

On Friday, Feb. 13, Prof. A. T. Jurasz will give a lecture at the Nuffield Institute, Oxford, at 8.15 P.M. He will speak on the surgical aspects of bile-duct infection. On Feb. 20, 27 and March 6 Dr. Dorothy Russell will speak on the morbid anatomy of internal hydrocephalus. All the lectures will be at 8.15 P.M.

Precautions against Typhus

In making their plans to guard against an outbreak of typhus in response to the Minister of Health's circular (No. 2513) the metropolitan boroughs are combining in civil defence groups. Special staff and premises for the group will operate in one borough, while the remaining boroughs undertake normal disinfection and disinfestation. The medical officers of health of Westminster, Chelsea, Kensington, Fulham and Hammersmith have already met and they propose to concentrate typhus work for their group at the disinfecting and cleansing stations of Kensington.

The Watch on Tuberculosis

Questions in the House of Commons have elicited that the bills of mortality for 1940 compared with those for 1939 show some increase in the incidence of tuberculosis, especially among women of 15–25 years of age. The figures for the first quarter of 1941 show a slight reassuring decline compared with those for the same period in 1940, but the Minister of Health is anxious that local authorities should see to it that their tuberculosis services at least do not fall below peace-time standards. The Medical Research Council have undertaken for the Minister an inquiry into the rise in the incidence of tuberculosis, and pending their report he urges local authorities (circular 2526) to extend and improve their arrangements for the care and aftercare of tuberculous patients and their families. From time to time it is possible to release beds in E.M.S. hospitals for the use of these patients, and where an authority is hard pressed for accommodation the medical officer of health should get in touch with the principal regional medical officer who will give what help he can.

Ella Sachs Plotz Foundation

During the eighteenth year of this foundation for the advancement of scientific investigation 67 applications for grants were received by the trustees, of which 49 came from seven different countries in Europe, Asia and North and South America. The total number of grants made during the year was 35. Grants are made to researches on problems in medicine and surgery. They may be used for the purchase of apparatus and supplies that are needed for special investigations, and for the payment of unusual expenses incident to such investigations, including technical assistance, but not for providing apparatus or materials which are ordinarily a part of laboratory equipment. Stipends for the support of investigators are granted only under exceptional circumstances. The maximum grants will usually be less than $500 and applications for the year 1942–43 should be sent before April, 1942, to Dr. Joseph C. Aub, Collis P. Huntington Memorial Hospital, 695, Huntington Avenue, Boston, Mass. U.S.A.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

Obituary

GRAHAM STEELL

M.D. EDIN., F.R.C.P.

Dr. Graham Steell, who died at his son's home in Streatham on Jan. 10 in his 91st year, had retired in 1911 from the staff of Manchester Royal Infirmary and the chair of clinical medicine at Victoria University. Those who can look back thirty years recall a physician, a pure consultant, who did everything humanly possible for the sick person; a teacher who passed on to his students knowledge to be gained only by experience; a thorough gentleman, kindly alike to colleague and patient.

Graham Steell was the youngest son of Sir John Steell, sculptor to H.M. the Queen in Scotland, born in Edinburgh July 27, 1851. From Edinburgh Academy he proceeded to the university where he qualified in 1872, later taking the gold medal in the M.D. He was house-physician to G. W. Balfour and assistant to T. R. Fraser and was then resident at fever hospitals in Leeds and London, gaining the extensive experience reflected in his future teaching. In 1878 on George Reed's retirement the governors of Manchester Royal Infirmary decided to have a lay superintendent and Steell became R.M.O., holding this office until he was appointed to the staff five years later. He soon made a reputation as a teacher, publishing two little red books on physical signs, of cardiac disease and of pulmonary disease. Under his guidance the student soon found that the clinical instinct was not easy to attain, but if the road was long and sometimes hard it was worth travelling. His armamentarium was simple: experience, a faculty for observation by eye and ear, a percussion hammer and a wooden stethoscope (called by his name) whose length for outpatient use "was greater than that of a flea-jump." The clinical laboratory, the sphygmomanometer, radiology were all in their infancy, the Wassermann reaction was unknown; differential diagnosis between aneurysm and mediastinal tumour, the subject of his Bradshaw lecture later, was then no easy matter. He used few drugs, but of those he used he was the master. "If you can't do a patient good," he would say, "be sure that at least you do him no harm"—and remembering Balfour and Fraser he trusted to Guy's pill, "gummi" opii, and even in those days Nativelle's granules, not to mention Christison's mixture, and his clinical clerks learnt quite a lot about strophanthus. "Of his keen insight into clinical work," writes E. B. L., "the following may be taken as examples. He recognised that some diastolic murmurs, apparently aortic, are really formed at the pulmonary valve and to these his name has been attached. He realised early, what is now common knowledge but then was not widely known, that all systolic murmurs at the apex were not due to mitral stenosis, but that some were the result of incapacity of the heart muscle to contract the ring from which the valves arose. He also described the friction murmur which occasionally occurs in cases of coronary thrombosis."

Practice came slowly to him at first owing to his diffident manner, but as time went on he came to be the leading cardiologist in the North of England and was summoned in consultation far and wide. "It was good to know," writes F. E. T., "how widely his skill and type of practice were appreciated. I had completed a term as his house-physician and was spending a week-end in the Midlands, when a local medical officer of some repute on being told who was my chief at once said, 'the purest consultant out of London.' This was absolutely true as he never saw a patient without an introduction from a practitioner. Working folk in Manchester often referred to him as 'physician Steell' in tones which implied that more than everything had been done for the patient. In those days it was more difficult to travel than it is now. While he held the chair of medicine he kept a brougham and pair and was the last Manchester consultant to do so. Consultations in local towns by train must have been weary affairs, and fees were low. Yet Mackenzie, then at Burnley, found time to spend many afternoons in Steell's wards where he saw mitral stenosis cases in much greater numbers than they existed near his home. At these visits (Steell not of course being there as it was his consulting hours) it was a privilege to take Mackenzie round and learn to use the polygraph. Steell and Mackenzie were fortunate in having in Shaw, the Padiham watchmaker, a man to make the instruments they required. When on his retirement from the active staff his former residents wished to give Steell a dinner, he declined because the speech it would have entailed would have been torture to him, but accepted the offer of his portrait to be engraved by Mr. Percy Martindale. Old students of Steell's will ever associate him with his habit of changing into the old frock coat which Sister Reid kept for his entry into the ward, the absolute quiet which had to prevail during his lengthy round, the little cough which first introduced us to the Brompton lozenge. They will remember also the baldness which made his appearance venerable whilst still young (caused it was said by an attack of typhus), and in the intimacy of his home 'Sandy' the Aberdeen terrier."

Steell's delicate frame made it difficult to credit the statement of Edinburgh juniors that he had been champion boxer of the university. At all events he soon got the better of the pulmonary tubercle which he developed soon after starting practice. In 1886 he married Agnes Dunlop McKie, superintendent of nurses at the infirmary. After her death in 1910 he went to live with their only son, Dr. Walter Steell, a medical officer of the Ministry of Health.

ERNEST ROWLAND FOTHERGILL

M.B. DURH.

Dr. E. R. Fothergill, who died on Jan. 20 at Tunbridge Wells in his 78th year, spent his life in general practice and in maintaining the status and dignity of the general practitioner. Born at Ryde, I. of W., in 1864, his father came from the Lake District and his mother from South Wales. He was educated at Malvern College, studied medicine at Guy's and Newcastle-on-Tyne, and qualified M.B. Durh. in 1895. After holding an appointment at the Durham Co. Asylum he practised at Roche, Cornwall, then in Southfields, and finally at Brighton for thirty years. Quite early he turned to medical politics and in 1911 became a member of the BMA council. When in that year the National Insurance Bill was being fiercely debated he was hon. secretary of the influential committee that took its stand on the principle of payment for services. His work on the Insurance Acts Committee earned him twenty years later election as BMA vice-president. He had an exceedingly fertile mind and many developments in the association's policy and procedure could be traced to his initiative. Above all he was absolutely incorruptible; he never sought honours and no temptation of that kind could have deviated him from his course for one moment. If he ever acknowledged a leader it was Victor Horsley whose strong regard for constitutional rectitude appealed greatly to him. Some people saw nothing in him but a hair splitter, but it was never safe to ignore one of Fothergill's points as many a chairman found to his cost. "I knew him probably best of anybody on our staff," writes Dr. Alfred Cox, "and had more occasion to curse his infernal ingenuity and persistence (he was a regular bloodhound if he got on a trail) than anybody. But no man had more reason to be grateful to him. I think it can fairly be said that outside his form of practice, which left him much time on his hands, he devoted the last forty years of his life to what he deemed to be the best interests of his profession and his ideals were very high indeed." During the last few years Dr. Fothergill had limited his practice to psychiatry. He is survived by his widow, daughter of Alderman G. H. Dexter, J.P., of Gateshead, who has served on the Hove town council.

Notes, Comments and Abstracts

CONTROL OF RATS

ERIC HARDY, F.Z.S.

PORTS and cities are carrying large stocks of foodstuffs nowadays, ruined buildings and heaps of rubble provide good breeding places for rats, and many gamekeepers skilled in rat-trapping have been called up or have transferred to other work. In the interest of public health it would be wise to check the increase in the rat population which these conditions favour. That black or ship rats, hosts of the bubonic plague flea, have in recent years formed a rising proportion of the rats in London, Cardiff and other ports, does not, of course, imply a danger of plague. As long ago as 1920–21 the Liverpool School of Tropical Medicine found the plague flea, *Xenopsylla cheopis*, freely on ship rats in the port,[1] but there has been no outbreak of bubonic plague because the fleas were not infected. Cases of plague occurring among Lascar seamen visiting Liverpool were quickly detected and controlled by the port health authorities. Nevertheless large numbers of rats harbouring the plague flea would be an unwelcome population.

Rat control in war-time is hampered not only by conditions favourable to the rat but by lack of many of the most effective lethal agents. Thus red squill, one of the commonest and safest poisons, is scarce because it is imported; sheet metal, used for rat-proofing buildings, is not to be had; and it is almost impossible to use strychnine (much favoured in America) because of the 1911 Protection of Animals Act. Asbestos and three-ply wood, however, do very well for rat-proofing; and white arsenic—used in quantities so small that it cannot endanger human life—is perhaps the best substitute for strychnine. Government rodent control representatives are finding it necessary to work in close coöperation with the municipal and sanitary authorities, because rats make great use of sewers as highways. Business houses should show a greater sense of responsibility for rat control, and provide more traps and fresher poison baits. The suggestion of the Ministry of Agriculture that there should be ten times as many traps as there are rats is by no means an exaggeration. Set with skill, traps can be highly effective even when unbaited. The use of virus to destroy rats rouses conflicting opinions. Rodents seem to become immune after a time, so that results are seldom permanent. Moreover, cases have been recorded where illness in humans seems to have resulted from bacteriological preparations used for killing rats and mice. An outbreak of enteritis among the employees of a London firm has been attributed to the use of a rat virus in the building.[3]

Skilled ratcatchers are getting scarce and it has been suggested that women should be trained for the task. Apart from man-made plans for their destruction rats may suffer from other attacks in war-time. Many of their natural enemies—stoats, foxes, badgers, owls, herons, otters, buzzards and polecats—are destroyed as vermin in the ordinary way by landowners wishing to preserve game. Less game preservation will give such creatures an opportunity to multiply and will help to control the increase of rats and rabbits. Rat-proofing of buildings and fumigation are perhaps the most effective methods of control in the long run, though it is impossible to dispense entirely with trapping and poisoning. The annual reports of the Liverpool port sanitary officials show that compulsory fumigation of ships reduced the average number of rats per ship from 58¾ in 1923 to 1⅛ in 1938; and I have found rat-proofing a valuable protective measure.[2] The Rodier method of rat control depends on upsetting the sex ratio in favour of the males who then exhaust the breeding females so that they die off. In practice this plan does not always work, though at the Manchester Zoo by killing only female rats over a period of 15 years they halved the rat population. The method appears to be cheap but slow. In the countryside trapping and ferreting are successful, but in congested towns, which quickly become reinfested, it is necessary to locate the breeding places and fumigate them, and to use rat-proofing, trapping and poisoning as auxiliary measures.

1. Merseyside Handbook to British Association, Liverpool, 1923.
2. Ministry of Agriculture Bulletin No. 30, 1932.
3. Hardy, E. *Food*, October, 1941.

BORN WITH A BANG

LAST winter some of us used to think enviously of drowsy sunlit beaches in mid-Pacific, of abundant fruits, flower necklaces, peace and plenty. But this morbid process, war, has invaded even fabulous Hawaii, and envy gives way to sympathy. In September, not long before the trouble reached them, the first issue of the *Hawaii Medical Journal* had appeared. This handsome publication—such thick glazed paper, such clear large type—is to be published every two months by the Hawaii Territorial Medical Association, which derives its membership from all the islands in the Hawaiian group. The November issue has already reached us. The editorial director, Dr. Lyle G. Phillips, and the editor, Dr. Harry L. Arnold, are assisted by five associate editors. The new journal, replacing the bulletin of the association, is intended to appeal to all doctors practising in Hawaiian Territory, whether members of the association or not. It contains original articles, abstracts and summaries not only on general medical topics, but on those which have a special significance in the islands. We wish the editorial staff well, and look forward, with them, to the time when Hawaii resumes the duties and pleasures of peace.

Births, Marriages and Deaths

BIRTHS

BONE.—On Jan. 23, the wife of Mr. Alan Bone, F.R.C.S., of Clissold Court, N.4—a son.

COLLINGWOOD.—On Dec. 13, at Bathurst, Gambia, the wife of Dr. Cuthbert Collingwood—a daughter.

FARQUHARSON.—On Jan. 20, at Gerrards Cross, the wife of Captain Edward Farquharson, R.A.M.C.—a daughter.

FREWER.—On Jan. 24, at Burton-on-Trent, the wife of Dr. E. G. Frewer—a son.

MURDOCH.—On Jan. 17, at Dumfries, the wife of Major Robin Murdoch, R.A.M.C.—a son.

SPENCER.—On Jan. 23, at Shrewsbury, the wife of Mr. John Churchill Spencer, F.R.C.S.—a son.

WRIGHT.—On Jan. 21, in Edinburgh, the wife of Major James Wright, R.A.M.C., Great Bentley, Colchester—a daughter.

YOUNG.—On Jan. 26, at St. Mary's Hospital, Paddington, to Mary (née Jaques), M.R.C.S., wife of A. W. O. Young—a daughter.

MARRIAGES

GORDON—ALLINGHAM.—On Jan. 24, at Blindley Heath, Surrey, John Gordon, M.R.C.S., flying-officer R.A.F.V.R., to Mabel Anne Allingham.

MANSON—POTTER.—On Jan. 17, at Brackley, Charles Noel Sinclair Manson, M.R.C.S., R.A.M.C., to Patricia Bridgman.

STEWART—MUNDAY.—On Jan. 24, at Newcastle-on-Tyne, Alexander Bryce Stewart, M.B., to Vera Munday, S.R.N.

THOMAS—ACKLAND.—On Jan. 17, at Daveyhulme, Frances Brian Thomas, major R.A.M.C., to Katherine Ackland.

DEATHS

BUCKELL.—On Jan 23, at Shipley, Yorks, Monamy Aston Cornwall Buckell, M.B. LOND., D.P.H.

CARPMAEL.—On Jan. 22, at Guildford, Cecil Edward Carpmael, M.B. LOND., of Dulwich Village.

CHALMERS.—On Jan. 24, at Bridge-of-Weir, Archibald Kerr Chalmers, LL.D., M.D. GLASG., F.R.F.P.S., D.P.H., aged 85.

EDE.—On Jan. 23, at Leamington Spa, Frances Ede, L.S.A., late of Harley Street, and of Crockham Hill, Kent, aged 90.

FOTHERGILL.—On Jan. 20, at Tunbridge Wells, Ernest Rowland Fothergill, M.B. DURH.

HUMPHREYS.—On Jan. 24, at Wokingham, Berks, Francis Rowland Humphreys, L.R.C.P., aged 83.

KERR.—On Jan. 22, at Hayes, Kent, Arthur Francis George Kerr, M.D. DUBL., D.T.M., late of Bangkok, aged 66.

KIDD.—On Jan. 21, at Chalfont St. Giles, Percy Kidd, M.D. LOND., F.R.C.P., aged 90.

LORIMER.—On Jan. 20, in Edinburgh, Alexander Patrick Gordon Lorimer, M.B. EDIN., F.R.C.S.E., D.P.H., lieut.-colonel I.M.S. retd.

MCDOUGALL.—On Jan. 22, at Fallowfield, Manchester, Percy McDougall, B.SC. LOND., M.B. MANC.

MACKENZIE.—On Jan. 15, at Auckland, New Zealand, Kenneth Mackenzie, M.D., M.CH. EDIN., F.R.C.S., aged 56.

RITSON.—On Jan. 23, at Reading, Robert Ritson, M.A. CAMB., M.R.C.S., aged 88.

THURSTAN.—On Jan. 19, at Bath, Edward Paget Thurstan, M.D. CAMB., aged 90.

WALKER.—On Jan. 21, in Liverpool, Albert Francis Walker, L.R.C.P.E.

Wellcome BRAND
BENZYL BENZOATE EMULSION

in the treatment of scabies

The value of benzyl benzoate in this condition is confirmed in numerous published reports.

'Wellcome' Benzyl Benzoate Emulsion is a stable, non-irritant preparation containing a high proportion (60 per cent.) of the compound, finely dispersed in a water-miscible medium.

A single thorough application gives immediate relief.

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London Prices subject to Medical Discount.

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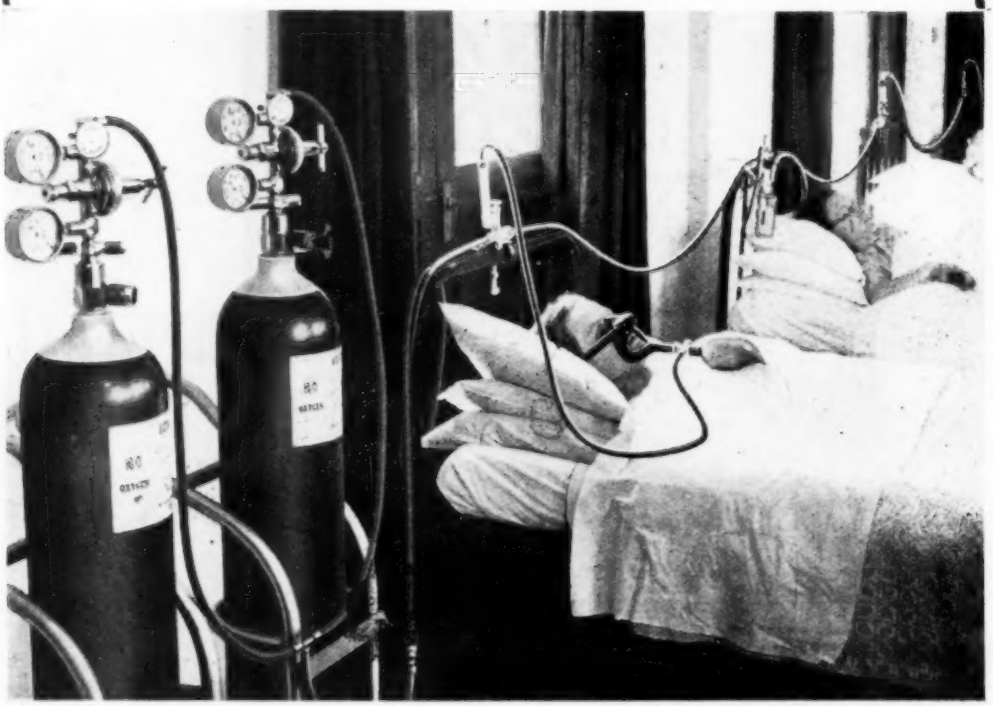

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With this apparatus, any ward can be converted into an Oxygen Resuscitation Ward in a few minutes, without structural alteration. The apparatus consists of two 100 cubic feet Oxygen cylinders (one 'Running', and one 'Reserve' which automatically cuts in when the first is exhausted), and appropriate number of quick-coupling units, two automatic pressure regulators and tubing.

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This apparatus is not only inexpensive to buy, and costs nothing to install but saves on the price of oxygen, which costs less per cubic foot in 100 cubic feet cylinders than in smaller ones.

The British Oxygen Company Limited's Technical Representatives will be glad to call on any Hospital with full details and prices.

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MEDICAL SECTION

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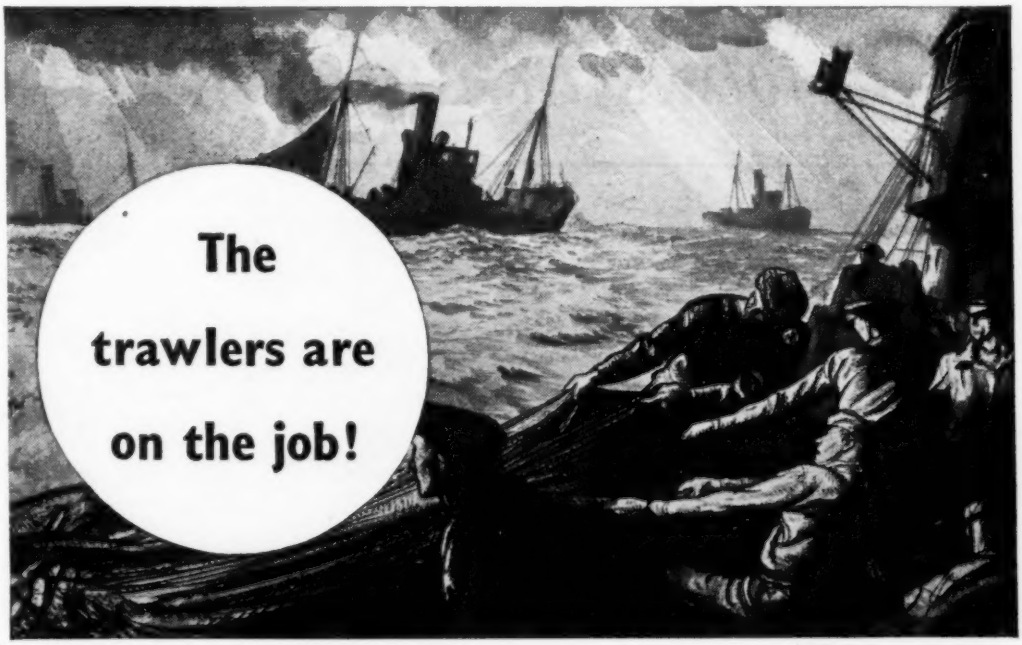
Incorporating COXETER & SON LTD A. CHARLES KING LTD.



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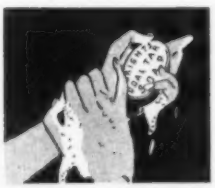
In safe hands—but are the hands themselves safe? Manual work brings many minor mischances to unaccustomed skin. Only a doctor knows how vulnerable are such small abrasions to dirt and germs. Because of this many doctors always use and recommend the use of Wright's Coal Tar Soap. With a nation working against time the recommendation was never more timely.



THEIR SKIN IS PROTECTED FROM INFECTION WITH **WRIGHT'S COAL TAR SOAP**

Useful & tempting, in cases where biscuits may be taken –

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DIGESTIVE BISCUITS

MADE FROM DAIRY-FRESH BUTTER AND WHOLESOME BRITISH WHEAT

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Provides an intense, shadowless, cool and diffused light, allowing the surgeon to see clearly and distinctly throughout the operation. Can be adjusted by a touch. Special Safety Suspensions. Easy to instal. Low maintenance. No glass mirrors to break or require adjustment. Outer glass of non-splinterable safety type.

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there is a very wide range of types from non-electrical to the very latest midget-valve types to ensure suitable fitting after Aurameter Test and an organisation which, in spite of the war, is still able to offer an adequate after-fitting service in all parts of the country

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The popularity of this mild antacid and gentle laxative is due largely to the favourable opinion of three generations of Medical practitioners. A teaspoonful or so of Dinneford's, given when the child is restless, has been in line with "Doctor's Orders" for over one hundred years.

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BRITISH POSTGRADUATE MEDICAL SCHOOL
(UNIVERSITY OF LONDON)

WAR SURGERY OF THE CHEST
16th to 20th February, 1942

Monday, 16th Feb.	10 A.M.	Introductory Lecture ..	Mr. A. Tudor Edwards, M.D., F.R.C.S.
	11.30 A.M.	Anatomy, Physiology, and Pathology of Chest Wounds.	Mr. T. Holmes Sellors, D.M., M.Ch., F.R.C.S.
	2 P.M.	The Pathology of Wounds of the Chest.	Mr. O. S. Tubbs, F.R.C.S.
Tuesday, 17th Feb.	10 A.M.	The Surgery of the Open Thorax.	Mr. C. Price Thomas, F.R.C.S.
	11.15 A.M.	Anæsthesia in Chest Wounds.	Dr. H. Woodfield Davies, B.A., L.M.S.S.A.
	1.30 P.M.	Closed Wounds of Chest, &c.	Prof. J. A. Nixon, C.M.G., M.D., F.R.C.P.
	2.30 P.M.	Operative Demonstrations on the Cadaver.	Mr. A. K. Henry, M.Ch., F.R.C.S.
Wednesday, 18th Feb.	10 A.M.	Gunshot Wounds of the Heart.	Prof. G. Grey Turner, LL.D., D.Ch., M.S., F.R.C.S.
	11.15 A.M.	Radiography in Gunshot Wounds of the Chest.	Dr. J. Duncan White, M.B., Ch.B., D.M.R.E.
	2 P.M.	Thoracico-abdominal Wounds.	Surgeon Rear-Admiral G. Gordon-Taylor, O.B.E., F.R.C.S.
	3.15 P.M.	Drainage of Pleura ..	Mr. R. C. Brock, M.S., F.R.C.S.
Thursday, 19th Feb.	10 A.M.	Treatment of Wounds of Chest Wall.	Mr. N. Barrett, M.Ch., F.R.C.S.
	11.15 A.M.	The Early Management and Nursing of Patients with Chest Wounds.	Mr. N. Barrett, M.Ch., F.R.C.S.
	2 P.M.	Demonstration of Cases at Brompton Hospital, S.W.3.	Mr. A. Tudor Edwards, M.D., F.R.C.S.
Friday, 20th Feb.	10 A.M.	Other Aspects of Closed Wounds of Chest.	Dr. A. J. Morland, F.R.C.P.
	11.15 A.M.	Late Results of Gunshot Wounds.	Mr. J. E. H. Roberts, O.B.E., F.R.C.S.
	2 P.M.	Operations on Cadaver, Mediastinum, Heart, &c.	Mr. A. K. Henry, M.Ch., F.R.C.S.

The fee for the Course is one guinea. Officers of the Armed Forces wishing to attend these lectures without payment of the fee should apply through their respective Director-Generals. Applications for tickets should be addressed to the DEAN, British Postgraduate Medical School, Ducane-road, W.12.

Further War Surgery Courses will commence as follows:—
WAR SURGERY OF NERVOUS SYSTEM .. MONDAY, 2ND MARCH, 1942.
OPERATIVE SURGERY IN WARTIME INCLUDING CADAVER SURGERY .. MONDAY, 16TH MARCH, 1942.

Royal College of Surgeons of England.

ELECTION TO THE COURT OF EXAMINERS.

Notice is hereby given that the Council, on the 9th April, 1942, will elect a Member of the Court of Examiners. Mr. H. S. Souttar, the retiring Examiner, is eligible and offers himself for re-election.

Fellows of the College desirous of becoming candidates for the office must make application to the Secretary on or before Monday, 23rd February, 1942.

31st January, 1942. KENNEDY CASSELS, Secretary.

St. Bartholomew's Hospital
AND LONDON HOSPITAL.

PRIMARY F.R.C.S.

Subject to sufficient entry, a JOINT COURSE for the PRIMARY F.R.C.S. EXAMINATION will be given by the professors and senior teachers, commencing 23RD FEBRUARY.

Fee 16 guineas (10 guineas to members of these colleges).

Early application should be made to the DEAN, London Hospital Medical College, Turner-street, E.1, or to the VICE-DEAN, St. Bartholomew's Hospital Medical College, at Queens' College, Cambridge.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, February 9th, March 9th, April 13th, 1942; MEDICINE, February 16th, March 16th, April 20th, 1942; MIDWIFERY, February 17th, March 17th, April 21st, 1942.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

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THE ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE

The course of instruction can be commenced at any time. Candidates holding appointments are admitted to Part II Course as part-time students.

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For Mental Cases with or without Certificates.
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In conjunction with the MALE NURSES' ASSN.
29, YORK ST., BAKER ST., LONDON, W.1
Mrs. MILLICENT HICKS, Superintendent W. J. HICKS, Secretary

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ROCHDALE (Lancs)

Founder: The late SIR A. J. LAW, J.P., M.P.

A Private Hospital, exclusively for the treatment of POST-ENCEPHALITIC PARKINSONISM, PARKINSON'S DISEASE and ALLIED DISORDERS

The Nursing Home is governed by Trustees; any surplus is utilized to help patients who cannot afford full fees. Extensive grounds. Hydro. Expert Massage and Physical re-education. Dietary treatment. Equipped with every laboratory apparatus for the investigation and treatment of the diseases. Results of the BULGARIAN TREATMENT published (*Lancet*, 1939, I, 693) approx.: 300 patients treated in the last 3 years. Terms moderate. Further particulars apply Medical Superintendent. Tel.: Rochdale 2960.

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For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES suffering from Mental and Nervous Disorders, Alcoholism and Drug Addiction, either voluntarily, temporarily, or under certificate. Patients are classified in separate buildings according to their mental condition. Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT. *Telephone:* Ashton-in-Makerfield 7311. *Telegraphic Address:* Wootton, Ashton-in-Makerfield.

THE OLD MANOR, SALISBURY

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A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

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A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

There is a steel and concrete Air Raid Shelter with heating and a lift to all floors

Inclusive charges — Apply SECRETARY — Telephone: Ruthin 66

VALE OF CLWYD SANATORIUM

This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X-ray plant. Every facility for Artificial Pneumothorax and for operations on the Chest. Electric Lighting. Central Heating.

For particulars apply to Medical Superintendent.

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The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach. There is also a charming house, EBWORTHY, MANATON, DARTMOOR, situated in 20 acres, 1100 ft. up for bracing moorland air

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PECKHAM HOUSE, 112, Peckham Road, London, S.E.15

Telegrams: "Alleviated, London" — **Telephone: Rodney 2641-2642**

A Private Mental Hospital, for Ladies and Gentlemen suffering from Nervous and Mental Illness, where the amenities of a comfortable home are combined with full investigation and every well-established modern treatment.

Terms from 3½ guineas weekly.

Illustrated Prospectus may be obtained from the Physician Superintendent.

THE CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISORDERS

new address: ASH HALL, BUCKNALL, near STOKE-on-TRENT, STAFFS *Telephone:* ASH BANK 215

Temporarily removed from Swaylands, Penshurst, Kent, to above country house about five miles from Stoke in the direction of Ashbourne.

The Hospital will continue to admit for treatment patients of moderate means suffering from psychoneurotic illnesses.

Patients suffering from psychotic illnesses are not eligible for admission.

Further particulars may be obtained by application to the Medical Director at the new address.

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Telegrams: "PSYCHOLIA, LONDON" — FOR THE TREATMENT OF MENTAL DISORDERS — *Telephone:* RODNEY 4343 (2 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON, and is 200 ft. above sea-level

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Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. Special Department for Insulin Therapy. Fully equipped Gymnasium, Golf Course, and Indoor Swimming Pool. Specially trained Occupational and Recreational Therapists.

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THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT Telephone: GATLEY 2231

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On the Cotswold Hills seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis. Terms: 5½ to 9½ guineas per week, inclusive. Full particulars from MEDICAL SUPERINTENDENT Cotswold Sanatorium, Cranham, Gloucester. *Telephone:* Witcombe 81. *Telegrams:* "Hoffman, Birdlip."

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Specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen suffering from NERVOUS and MENTAL breakdown. Voluntary and certified patients received. Ladies also admitted as Temporary Patients without certification. Terms moderate. *Apply*, RESIDENT PHYSICIAN, who may be seen in Liverpool, by appointment. *Tel. No. 8 Formby.*

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A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2362.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

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REGISTERED HOSPITAL for Voluntary, Temporary, or Certified PRIVATE PATIENTS of UPPER and MIDDLE CLASSES. Own kitchen garden. Modern forms of treatment, including Electro-shock Therapy. Out-door games, cinema visits, motor drives arranged. Visiting Chaplain.

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Near DARTFORD, KENT.

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards.

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Private Home for Ladies mentally ill. Voluntary and Temporary Patients received.

Medical Superintendent: Dr. J. A. McCLINTOCK.

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A Private Hospital for the Treatment and Care of Mental and Nervous Illnesses in both Sexes.

A modern country house, 12 miles from Marble Arch, in attractive and secluded surroundings. Fees from 10 guineas per week inclusive. Cases under Certificate, Voluntary and Temporary Patients received for treatment.

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For LADIES and GENTLEMEN of Unsound Mind.

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FACTORIES ACT, 1937.

The following appointment as Examining Surgeon under the Factories Act, 1937, is vacant.

Applications should be sent to the CHIEF INSPECTOR OF FACTORIES, 28, Broadway, London, S.W.1.

District	*County*	*Latest date for receipt of application*
MARTOCK ..	SOMERSET ..	10th February, 1942

The Victoria Hospital for Children,

Tite-street, Chelsea, S.W.3.

Applications are invited from registered medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B1), to become vacant on 1st March, 1942. Applicants should have held a hospital appointment. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Salary is at the rate of £200 per annum.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent not later than the 11th February, 1942, to—

D. ST. JOHN BAMFORD, Secretary.

National Temperance Hospital,

Hampstead-road, London, N.W.1.

Applications are invited from registered medical practitioners (British), Male or Female, for the appointment of CASUALTY OFFICER (A), who will require to act as House Surgeon under the M.S. The appointment is for a period of six months, dating as from 1st March. Salary at least £120 per annum, with board, residence, and laundry allowance.

Applications, stating qualifications, age, &c., with copies of not more than three testimonials, by the 11th February, addressed to the SECRETARY.

Hampstead General Hospital.

(Region 5, Sector 4, M.S.)

Applications are invited from single medical Men or Women, including R practitioners holding A posts, as follows :—

(1) HOUSE SURGEON (B2), resident at Hampstead, N.W.3, for six months, vacant 1st March. Salary £133 6s. 8d. per annum. (2) CASUALTY MEDICAL OFFICER (B2), resident at Out-patient Department, Camden Town, N.W.1, for six months, vacant 1st March. Salary £100 per annum, plus an allowance of £50 per annum for duties in connexion with First-Aid Post established there.

Applications on the prescribed form, with copies of three testimonials, to be returned by 16th February.

KENNETH A. F. MILES, House Governor.

St. John's Hospital for Diseases of

THE SKIN, 5, Lisle-street, Leicester-square, W.C.2.

Applications, from Males only, for the posts of OUT-PATIENT MEDICAL REGISTRARS are invited to be sent to the undersigned on or before Saturday, 7th February, 1942, as follows : Two full-time Registrars at £100 per annum each, One part-time Registrar at £50 per annum.

Applicants must be duly qualified and registered medical practitioners. Particulars of the duties can be obtained on application to : LEONARD G. R. TURPIN, Secretary.

20th January, 1942.

Charing Cross Hospital.

MEDICAL REGISTRAR (RESIDENT).

Applications are invited from registered medical practitioners (Male) for the above B1 appointment. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. Minimum commencing salary £350 per annum.

Applications, together with copies of three testimonials, should be sent, to arrive not later than first post 16th February, 1942, to : GEORGE J. JONES, Secretary.

Dreadnought Seamen's Hospital,

Greenwich, S.E.10.

Applications invited for post of CASUALTY OFFICER from Male British registered practitioners over military age or exempt from military service. Salary at £200 per annum, with full residential emoluments ; or part-time might suit.

Applications, stating age, qualifications with dates, and previous experience, with copies of testimonials, to—

Seamen's Hospital Society. F. A. LYON, Secretary.

Tilbury Hospital, Tilbury, Essex.

(SEAMEN'S HOSPITAL SOCIETY.) (116 Beds.)

Applications are invited from British Male registered practitioners for the appointment of HOUSE OFFICER (A), falling vacant on 1st February, 1942, including R practitioners within three months of qualification when appointment will be for six months. Salary at the rate of £120 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and testimonials, to be sent to the undersigned.

F. A. LYON, Secretary.

Seamen's Hospital Society, Greenwich, S.E.10.

Middlesex County Council.

RESIDENT JUNIOR ASSISTANT MEDICAL OFFICER (B2) required by HAREFIELD COUNTY SANATORIUM AND HOSPITAL, HAREFIELD, MIDDLESEX. Applications invited from registered medical practitioners, Men or Women, who have held resident appointments in general hospitals and also from R practitioners who now hold A posts. Experience in modern treatment of tuberculosis an advantage. Salary £250 per annum, plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties such as Council may direct under supervision of Medical Superintendent. Appointment, subject to medical examination and one month's notice, is for six months with possibility of extension to twelve months (except in case of R practitioners). Post now vacant.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, to the undersigned. Application forms not provided. Relationship to any member or officer of Council to be disclosed. Copies of not more than three recent testimonials. Canvassing, directly or indirectly, will disqualify. Closing date 7th February, 1942.

C. W. RADCLIFFE, " B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

Middlesex County Council.

NON-RESIDENT TEMPORARY ASSISTANT PATHOLOGIST (B1) required for CENTRAL MIDDLESEX COUNTY HOSPITAL, WILLESDEN, N.W.10. Applications invited from registered medical practitioners (including R practitioners holding B2 or B1 appointments) with extensive postgraduate experience in pathological work, especially biochemistry, bacteriology, and serology. Salary £650 per annum. Whole-time official duties such as Council may direct, may include teaching students. Salary is inclusive and any fees received must be paid to County Council. Subject to medical examination and one month's notice.

Application, stating age, nationality, qualifications with dates, present post, and previous appointments, to the undersigned. Application forms not provided. Relationship to any member or officer of the Council to be disclosed. Copies of not more than three recent testimonials. Canvassing, directly or indirectly, will disqualify. Closing date 7th February, 1942.

C. W. RADCLIFFE, " B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

Middlesex County Council.

RESIDENT CASUALTY OFFICER (B1) required for NORTH MIDDLESEX COUNTY HOSPITAL, Edmonton, N.18. Must be registered medical practitioners (including suitably qualified R practitioners in B2 or B1 posts) who have held house appointments in general hospitals and had good all-round experience. Salary £350 per annum, plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties under Medical Superintendent will include dealing with casualties and admissions to hospital and such other duties as may be required. Opportunity for major surgery. Appointment, subject to medical examination and one month's notice, is primarily for six months with possibility of extension for further six months. Hours of duty are 10 A.M. to 6 P.M. daily, with Saturday afternoons and Sundays free. Post vacant end February.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, to the undersigned. No application forms provided. Relationship to any member or officer of the Council to be disclosed. Copies of not more than three recent testimonials. Canvassing, directly or indirectly, will disqualify. Closing date 14th February, 1942.

C. W. RADCLIFFE, " B3," Clerk of the County Council.

Guildhall, Westminster, S.W.1.

County Borough of Rochdale.

MUNICIPAL GENERAL HOSPITAL, BIRCH HILL.

(475 Beds.)

Applications are invited from registered medical practitioners (Male) for the post of TEMPORARY SENIOR ASSISTANT MEDICAL OFFICER (B1), including R practitioners holding B2 or B1 appointments. Previous hospital experience, including maternity and surgical work, is essential. The appointment will include certain services in connexion with the adjoining Public Assistance Institution. Salary at the rate of £350 per annum, rising by annual increments of £25 to £450 per annum, plus war bonus, together with board, residence, and laundry emoluments valued at £100 per annum. In the case of a married man emoluments will not include board but will include an unfurnished house and laundry.

Application forms may be obtained from the Medical Officer of Health, Public Health Offices, Baillie-street, Rochdale, and must be returned to him not later than Friday, the 13th of February, 1942. HARRY BANN, Town Clerk.

County Borough of Middlesbrough.

MUNICIPAL HOSPITAL.

Applications are invited from unmarried registered medical practitioners (Male) for the position of ASSISTANT RESIDENT MEDICAL OFFICER (B2). R practitioners who hold A posts may apply when appointment will be limited to six months; otherwise it will be for a period of twelve months.

The salary is at the rate of £270 per annum, together with full residential emoluments.

Candidates should have had recent hospital experience.

In addition to hospital duties, the successful candidate will be required to undertake relief or holiday duty work of other whole-time members of the Corporation's medical staff as required.

The Municipal Hospital contains 353 Beds and is a training school for nurses, and affords excellent facilities for post-graduate work and experience.

The appointment is subject to the rules and regulations of the Middlesbrough Corporation. The successful candidate will be required to pass satisfactorily a medical examination.

Applications, stating age, qualifications, nationality, and particulars of present post and experience, together with copies of not more than three recent testimonials, should be sent to the Medical Officer of Health, Health Department, Municipal Buildings, Middlesbrough, immediately.

21st January, 1942. PRESTON KITCHEN, Town Clerk.

Winterton Hospital.

(1060 Beds.)

Applications are invited from registered medical practitioners (Male or Female) for the following appointments, to be vacant on 18th February, 1942. R practitioners within three months of qualification may apply when appointments will be for a period of six months :—

HOUSE SURGEON (A).

HOUSE SURGEON (A) to FRACTURE CLINIC.

Salary at the rate of £120 per annum, with board, residence, and laundry.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to the MEDICAL SUPERINTENDENT.

Winterton Hospital, Sedgefield, Stockton-on-Tees, Co. Durham.

Norfolk and Norwich Hospital,

NORWICH. (440 Beds.)

Applications are invited for the post of HOUSE SURGEON (A), including R practitioners within three months of qualification. Appointment will be limited to six months. Salary will be at the rate of £170 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three testimonials, should be sent as soon as possible to—

FRANK INCH, House Governor and Secretary.

30th January, 1942.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £630 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

County Borough of Rotherham.

MUNICIPAL GENERAL HOSPITAL.

RESIDENT ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners for the above appointment. R practitioners within three months of qualification may apply when appointment will be limited to a period of six months. The salary is at the rate of £180 per annum, with full residential emoluments. A temporary cost-of-living bonus amounting at present to 10 per cent. of the annual salary has been granted by the Borough Council, but is subject to alteration or cancellation by the Council. The appointment is subject to the provisions of the Local Government Superannuation Act and is terminable by one month's notice on either side.

Application forms may be obtained from the Medical Superintendent, Municipal General Hospital, Rotherham, and must be returned, endorsed "Resident Assistant Medical Officer," on or before the 11th February, 1942, to—

CHAS. L. DES FORGES, Town Clerk.

Municipal Offices, Rotherham, 21st January, 1942.

Leicester Royal Infirmary.

(950 Beds.)

PRELIMINARY NOTICE OF VACANCIES, 1ST APRIL.

(Six Months' Appointments.)

DEPUTY RESIDENT SURGICAL OFFICER AND CASUALTY OFFICER (B1). Salary £200 per annum.

RESIDENT MEDICAL OFFICER AND HOUSE PHYSICIAN (B1). Salary £200 per annum.

Suitably qualified R practitioners holding B2 or B1 posts may apply.

Two ANÆSTHETISTS (B2). Salary £150 per annum for first six months, £200 per annum for second six months, and £250 per annum for third six months.

HOUSE PHYSICIAN (B2). Salary £125 per annum.

R practitioners holding A posts may apply.

HOUSE PHYSICIAN (A). Salary £125 per annum.

Four HOUSE SURGEONS (A). Salary £125 per annum.

R practitioners within three months of qualification may apply.

With full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, if any, and accompanied by copies of three testimonials, should be sent to the HOUSE GOVERNOR AND SECRETARY on or before 12th February.

24th January, 1942.

Royal Northern Infirmary,

INVERNESS. (205 Beds.)

Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A) for EAR, NOSE, AND THROAT DEPARTMENT, and of HOUSE PHYSICIAN (A), to commence duties on 1st March. The appointments are for six months. Salary at the rate of £100 per annum, with board, lodging, laundry, &c. Normal staff of five residents, who are required to be available for anæsthetics and general medical duties. R practitioners within three months of qualification may apply but must have obtained the sanction of the Scottish Central Medical War Committee.

Applications, stating age, qualifications with dates, and nationality, and copies of testimonials, to be sent to—

T. C. MACKENZIE, M.D., Medical Superintendent.

Walsall General Hospital.

(181 Beds.)

Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A) to the ORTHOPÆDIC DEPARTMENT, to become vacant on the 1st March, 1942. R practitioners within three months of qualification may apply. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be forwarded not later than the 16th February, 1942, to: R. C. MILLWARD, House Governor.

Walsall General Hospital.

Applications are invited from registered medical practitioners for the appointment of a HOUSE PHYSICIAN (A), to become vacant on the 1st March, 1942, including R practitioners within three months of qualification. The appointment will be for a period of six months. Salary at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be forwarded to the undersigned immediately.

R. C. MILLWARD, House Governor.

Rochdale Infirmary and Dispensary,

LANCS. (110 Beds.)

The Board of Management invites applications for the appointment of HOUSE SURGEON (A), appointment now vacant, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary attached to the appointment is at the rate of £150 per annum, including board, residence, and laundry.

Applications, stating age, nationality, &c., together with copies of three recent testimonials, to be sent to the Secretary. The successful candidate must be a member of a Medical Defence Society.

W. WYNNE, Secretary.

Infirmary Office, Rochdale.

Southend-on-Sea General Hospital.

Applications are invited from registered medical practitioners (Male) for the posts of—

CASUALTY OFFICER AND ANÆSTHETIST (A), for which R practitioners within three months of qualification may apply;

HOUSE SURGEON (B2), for which R practitioners holding A posts may apply.

Salary at the rate of £150 per annum, with full residential emoluments. The appointments are for six months, and become vacant on 16th February.

Applications, stating age, qualifications, nationality, and accompanied by copies of two recent testimonials, to be sent not later than 10th February to—

P. H. CONSTABLE, House Governor and Secretary.

Hertfordshire County Council

PUBLIC ASSISTANCE.

COUNTY INSTITUTION, OSTER HOUSE, ST. ALBANS.

Applications are invited from registered medical practitioners for the position of HOUSE SURGEON (A), single (either sex), at the above Institution, which comprises general medical and surgical wards with separate maternity and children's units. Salary £175 per annum, with furnished quarters, rations, laundry, and attendance. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, stating age, qualifications, and experience, with copies of three recent testimonials, should be addressed to the Clerk to the St. Albans Guardians' Committee, Oster House, St. Albans, as soon as possible.

ELTON LONGMORE, Clerk of the County Council.

Hertford, Herts, January, 1942.

Hull Corporation Health Department.

BEVERLEY ROAD HOSPITAL.

TEMPORARY ASSISTANT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners of either sex, who must be single and not more than forty years of age, for the above appointment. R practitioners within three months of qualification may apply when appointment will be for a period of six months; otherwise it will be for a period of one year. Salary £250 per annum, together with usual residential emoluments.

Application forms may be obtained from the MEDICAL OFFICER OF HEALTH, Guildhall, Hull, to whom they should be returned not later than 10 A.M. on Monday, the 16th February, 1942.

City of Cardiff.

LLANDOUGH HOSPITAL.

Applications are invited for the appointment of RESIDENT SURGICAL OFFICER (B1). It is essential for candidates to have had extensive postgraduate training and experience in operative surgery. Candidates should hold the Diploma of F.R.C.S. or undertake to obtain that qualification within a reasonable period. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply. The salary is £450 per annum, rising by £25 per annum to £550 per annum, with emoluments valued at £140 per annum.

Further particulars may be obtained from the Medical Officer of Health, City Hall, Cardiff, to whom applications, stating age, nationality, qualifications (with dates), experience, and details of previous appointments, together with copies of three recent testimonials, and endorsed "Resident Surgical Officer," should be sent not later than 7th February, 1942.

D. KENVYN REES, Town Clerk.

City Hall, Cardiff, 17th January, 1942.

Montagu Hospital, Mexborough.

(120 Beds.)

Applications are invited from registered medical practitioners (Male) for the appointment of RESIDENT CASUALTY OFFICER (B2), including R practitioners who now hold A posts, when appointment will be limited to six months. Otherwise it will be for a period of twelve months. The salary is at the rate of £250 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality and present post, and accompanied by copies of three recent testimonials, should be sent immediately to—

A. LAYCOCK, Secretary-Superintendent.

Montagu Hospital, Mexborough.

(120 Beds—3 Residents.)

Applications are invited from registered medical practitioners for the post of RESIDENT HOUSE SURGEON (A) (Male), to become vacant at the beginning of February, 1942. R practitioners within three months of qualification may apply when appointment will be for a period of six months; otherwise it will be subject to renewal. This post offers excellent opportunity for experience in all branches of surgery. Salary £200 per annum, with usual residential emoluments.

Applications, stating age, nationality, qualifications, and experience, accompanied with copy testimonials, to be sent to the undersigned immediately.

A. LAYCOCK, Secretary-Superintendent.

Halifax General Hospital.

(A1—400 Beds.)

RESIDENT MEDICAL OFFICER (A).

Applications are invited from registered medical practitioners, Male and Female, for the above appointment, including R practitioners within three months of qualification when appointment will be limited to six months. The duties will be mainly surgical. Salary is at the rate of £150–£250 per annum, according to experience, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to the MEDICAL SUPERINTENDENT.

General Hospital, Halifax.

Doncaster Royal Infirmary.

Applications are invited from registered medical practitioners (Male) for the appointment of SENIOR HOUSE PHYSICIAN (B1). Suitably qualified R practitioners now holding B2 or B1 posts may apply. Salary is at the rate of £250 per annum, with the usual emoluments.

Applications, together with copies of two recent testimonials, should be forwarded immediately to—

R. LANCASTER, Secretary-Superintendent.

Doncaster Royal Infirmary.

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), to become vacant on 1st March. Applicants must be unmarried and have had previous surgical experience. Salary will be at the rate of £250 per annum, rising by half-yearly increments of £25. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

Applications, stating age, nationality, qualifications with dates, and experience and details of previous appointments, accompanied by copies of not more than three testimonials, to be sent immediately to—

R. LANCASTER, Secretary-Superintendent.

Pontefract General Infirmary

AND THE HYDES HOSPITAL (112 Beds.)

Applications are invited from registered medical practitioners, Male, for the appointment of a HOUSE SURGEON (A), to become vacant immediately, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned.

D. J. RICHARDS, Secretary-Superintendent.

County of Lincoln.

PARTS OF KESTEVEN.

Applications are invited from qualified medical Men or Women for the post of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH.

The officer appointed will be required to act as Assistant Tuberculosis Officer and School Medical Officer, and to undertake maternity and child welfare work, and such other duties as may be assigned to the post.

The salary will be £500 per annum, rising by annual increments of £25 to £700, together with travelling allowance in accordance with the County Scale. Previous experience will be taken into consideration in deciding the commencing salary.

The appointment, which will be terminable by three months' notice on either side, will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass the necessary medical examination.

Applications should be made on forms which may be obtained from the undersigned, and must reach him not later than the 7th February, 1942.

G. H. BANWELL, Clerk of the County Council.

County Offices, Sleaford, Lincs.

North Staffordshire Royal Infirmary,

STOKE-ON-TRENT.

Applications are invited from registered medical practitioners (Male and Female), including R practitioners who now hold A posts, or within three months of qualification, for the post of HOUSE PHYSICIAN (A), vacant 1st February. Salary will be at the rate of £150 per annum, with board, residence, and laundry, and the appointment will be for six months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent as soon as possible to the HOUSE GOVERNOR.

North Staffordshire Royal Infirmary,

STOKE-ON-TRENT. (472 Beds.)

Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant 1st April, 1942. Suitably qualified R practitioners holding B1 or B2 appointments are invited to apply. The Fellowship of one of the Royal Colleges of Surgeons is desirable. Salary is at the rate of £350 per annum, with board, residence, and laundry, and the post is tenable for a period of twelve months.

Applications, stating age, nationality, qualifications, accompanied by three copy testimonials, should be sent as soon as possible to the HOUSE GOVERNOR.

Victoria Hospital, Accrington.

Applications are invited from registered medical practitioners (Male) for the appointment of JUNIOR HOUSE SURGEON (A), including R practitioners within three months of qualification when appointment will be for a period of six months. Duties will include charge of Medical Wards, Casualty Department and Emergency Anæsthetist. Salary £175 per annum.

Applications, stating age and qualifications, accompanied by copies of recent testimonials, should be sent to—

W. H. WARBURST, Honorary Secretary.

Victoria Hospital, Accrington.

Burton-on-Trent General Infirmary.

Applications are invited from registered medical practitioners (Male) for the appointment of CASUALTY OFFICER AND HOUSE PHYSICIAN (A), including R practitioners within three months of qualification when appointment will be for six months. Salary at the rate of £150 per annum, with usual emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, to be sent to—

E. W. THORNLEY, Superintendent and Secretary.

Bedford County Hospital.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE SURGEON (A post), which became vacant the middle of January, including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the SECRETARY, Honorary Medical Staff Committee, as soon as possible.

County Borough of Huddersfield.

ASSISTANT SCHOOL MEDICAL OFFICER

Applications are invited for the above Temporary War-time post, for which a good knowledge of diseases of children and experience in bacteriology are essential.

Salary Scale £500 to £700. Commencing salary will be based on candidate's previous experience. The post may be terminated by one month's notice on either side

Applications, stating age, and giving full particulars of training, qualifications, and appointments held since qualification, should be forwarded to the MEDICAL OFFICER OF HEALTH, Ramsden-street, Huddersfield, together with copies of two recent testimonials.

Staffordshire County Council.

ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND MEDICAL OFFICER OF HEALTH.

Applications are invited for the joint whole-time appointment of an Assistant County Medical Officer of Health for the Administrative County of Stafford, and Medical Officer of Health for the Darlaston Urban District (population 20,300). The salary will be at the rate of £800 per annum, and will be subject to the provisions of the Local Government Superannuation Act, 1937.

Applicants must be fully qualified medical men with experience in public health duties and must hold the Diploma in Public Health. The person appointed will, as regards his duties as Assistant County Medical Officer of Health, act under the direction of the County Medical Officer of Health, and will be required to perform such duties as may be from time to time prescribed. As regards his duties as District Medical Officer of Health, the officer will be subject to the sole control and direction of the local Sanitary Authority.

The joint appointment is subject to the approval of the Minister of Health and Board of Education, and also, so far as the office of District Medical Officer of Health is concerned, to the provisions of the Sanitary Officers (Outside London) Regulations, 1935.

The joint appointment will be subject to three calendar months' notice on either side, subject, so far as the office of District Medical Officer of Health is concerned, to the consent of the Minister of Health.

The successful candidate will be required to pass a medical examination and to produce a birth certificate.

Forms of application may be obtained from the undersigned and should be returned by first post on the 12th February, 1942, together with copies of not more than three testimonials.

H. L. UNDERWOOD, Clerk of the County Council.

County Buildings, Stafford, 21st January, 1942.

Warwickshire and Coventry Joint COMMITTEE FOR TUBERCULOSIS.

Applications are invited from qualified and registered medical practitioners, Men or Women, for the post of TEMPORARY ASSISTANT TUBERCULOSIS OFFICER. Male applicants must be ineligible for service in the Armed Forces. The person appointed must be prepared to devote the whole of his or her time to the duties of the office, and must have had experience in the diagnosis and treatment of tuberculosis.

The salary will be at the rate of £700 per annum, plus a cost-of-living bonus of £24 per annum, together with motor-car allowances in accordance with the Joint Committee's scale, and other reasonable travelling expenses.

Forms of application and statement of the duties and terms of the appointment can be obtained from the undersigned. Applications, marked "Temporary Assistant Tuberculosis Officer," with copies of not more than three recent testimonials, must be received by me not later than first post on Friday, the 20th February, 1942.

L. EDGAR STEPHENS, Clerk of the Joint Committee.

Shire Hall, Warwick.

Joint Committee of the County Councils OF DURHAM AND NORTHUMBERLAND AND THE COUNTY BOROUGH COUNCILS OF GATESHEAD AND NEWCASTLE UPON TYNE.

ASSISTANT VENEREAL DISEASES MEDICAL OFFICER (MALE, TEMPORARY).

Applications are invited from Male medical practitioners experienced in the diagnosis and treatment of venereal diseases for the above whole-time appointment.

Duties include the investigation and treatment of male and female out-patients and in-patients, and commence 24th March, 1942, approximately. Salary £500 per annum, increasing by annual increments of £25 to a maximum of £700. Appointment for duration of the war, or subject to three months' notice on either side.

Applications, stating age, nationality, qualifications, special experience in venereal diseases work and other branches of medicine or public health, together with copies of testimonials or references, to be forwarded to the CLINICAL MEDICAL OFFICER, Joint Committee's Clinic, Newcastle General Hospital, Westgate-road, Newcastle upon Tyne, 4, from whom further particulars may be obtained.

Royal Berkshire Hospital, Reading.

The Board of Management invites applications for the appointment of HONORARY PHYSICIAN.

Candidates must be medical graduates of one of the Universities of the British Empire and their names entered on the Medical Register. The appointment is temporary and is terminable within twelve months of the conclusion of hostilities.

The elected candidate will be appointed for a period ending on the third Tuesday in January, 1943, and will be eligible for re-election. Canvassing on the part of a candidate or on his behalf will disqualify him. An Honorary Assistant Physician is an applicant for the post, and in the event of his election the post of Honorary Assistant Physician which he vacates will also be filled forthwith.

Candidates are required to provide six copies of their application and testimonials, which must be addressed to the Secretary, and reach him not later than 9 A.M. on Friday, 20th February, 1942. No testimonials will be required from candidates who are members of the existing Medical Staff.

The election will be held on 3rd March, 1942.

By Order, H. E. RYAN, Secretary and House Governor.

Royal Berkshire Hospital, Reading.

Applications are invited from registered medical practitioners for the following appointments, which fall vacant on the dates stated :—

HOUSE SURGEON (A), on the 1st March, 1942.
HOUSE SURGEON (A), on the 6th April, 1942.
HOUSE PHYSICIAN (A), on the 6th April, 1942.

R practitioners within three months of qualification may apply. The appointments are for six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent immediately to—

H. E. RYAN, Secretary and House Governor.

The Royal Eastern Counties' Institution FOR THE MENTALLY DEFECTIVE, COLCHESTER.

ASSISTANT MEDICAL OFFICER (MALE) (B1).

Applications are invited for the above post from duly qualified medical practitioners. Total Beds over 1700. Suitably qualified R practitioners holding B2 or B1 appointments are invited to apply.

The medical man appointed will be stationed at the Extension, Turner Village, which has at present 500 Beds.

The salary will be at the rate of £400 per annum, rising, subject to the Directors' approval, by £25 annually to £450 per annum, together with furnished apartments, board, laundry, and attendance. No deductions. Accommodation is available for a married man. Previous specialisation in Mental Deficiency not necessary.

There is a new and fully equipped laboratory.

Apply, giving age, nationality, full details of qualifications, and copies of testimonials, to the MEDICAL SUPERINTENDENT, Royal Institution, Colchester.

Royal United Hospital, Bath.

Applications are invited from registered medical practitioners (Male), including R practitioners within three months of qualification, for the following appointments, which become vacant on the dates stated :—

HOUSE SURGEON (A) (General Surgery and Ear, Nose, and Throat). 1st March.
HOUSE SURGEON (A) (General Surgery). 1st March.

Salaries at the rate of £150 per annum, with board, residence, and laundry. R practitioner appointments will be for a period of six months.

Applications (clearly indicating the post desired), stating age, qualifications, and experience, together with a copy of three testimonials, to reach the undersigned by 19th February, 1942.

J. LAWRENCE MEARS, Secretary-Superintendent.

20th January, 1942.

The Warwickshire and Coventry Joint COMMITTEE FOR TUBERCULOSIS.

KING EDWARD VII MEMORIAL SANATORIUM, HERTFORD HILL, Near WARWICK.

Applications are invited from registered medical Women practitioners for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (A) at the above Sanatorium. The appointment will be for six months and may be renewed for a further period of six months. The salary is at the rate of £300 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to the Medical Superintendent, King Edward VII Memorial Sanatorium, Hertford Hill, near Warwick, not later than 6th February, 1942.

L. EDGAR STEPHENS, Clerk to the Joint Committee.

Shire Hall, Warwick, 23rd January, 1942.

Royal Cornwall Infirmary, Truro.

(285 Beds—3 Residents.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a HOUSE PHYSICIAN (B2) in charge of the MEDICAL EYE, EAR, NOSE, AND THROAT DEPARTMENT, vacant 1st March, 1942. R practitioners who now hold A posts may apply when appointment will be limited to six months. The salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of three recent testimonials, should be sent to—

W. E. GRENFELL, Honorary Secretary.

Truro, 24th January, 1942.

Herefordshire General Hospital, HEREFORD. (210 Beds.)

Applications are invited from registered medical practitioners (Male or Female), including R practitioners within three months of qualification, for the appointment of JUNIOR HOUSE SURGEON (A), including House Surgeon to Ear, Nose, and Throat Department.

The appointment will be limited to six months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications, and nationality, and accompanied by copies of three recent testimonials, should be sent to : T. W. UPTON, Secretary.

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Hull Corporation Health Department.

TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH (MALE OR FEMALE).

Applications are invited for the above temporary post from duly qualified medical Men or Women of not less than three years' standing in their profession.

Preference given to candidates possessing the Diploma in Public Health or equivalent qualification, and to those experienced in refraction work.

Salary £600 per annum, rising by annual increments of £25 to £700 per annum.

Duties consist mainly of work in the School Medical Department.

Application forms may be obtained from, and should be returned to, the MEDICAL OFFICER OF HEALTH, Guildhall, Hull, not later than 10 A.M. on Monday, 9th February, 1942.

The Children's Hospital, Sheffield (Inc.)

(157 Beds.)

Applications are invited from registered medical practitioners Male and Female (including R practitioners within three months of qualification), for the appointment of HOUSE PHYSICIAN (A), to become vacant on the 1st March, 1942. The appointment is for a period of six months, with salary at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned. The successful candidate must be a member of a Medical Defence Society.

T. H.G. GARTLAND, Superintendent and Secretary.

Derbyshire Royal Infirmary,

DERBY. (General Hospital—416 Beds.)

Applications are invited from registered medical practitioners, Male and Female, for the appointment of a

CASUALTY OFFICER (A),

HOUSE SURGEON, GENERAL SURGERY (A)

vacant now, including R practitioners within three months of qualification, when appointments will be limited to six months, otherwise will be for a period of twelve months. Salary is at the rate of £150 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, accompanied by copies of three recent testimonials, should be sent immediately to—

ARTHUR TAYLOR, Superintendent and Secretary.

Birmingham Accident Hospital

AND REHABILITATION CENTRE.

Applications are invited from registered medical practitioners, Male and Female, for the appointment of Two HOUSE SURGEONS (A), including R practitioners within three months of qualification when appointment will be limited to six months. Salary is at the rate of £100 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent as soon as possible to—

A. A. MACIVER, Secretary.

Bath-row, Birmingham, 15, 14th January, 1942.

St. Paul's Eye Hospital, Liverpool.

Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT SURGICAL OFFICER (B2), to become vacant on 1st March, 1942. Applicants should have held house appointments and had surgical experience. Six months' appointment. R practitioners holding A posts may apply. Salary is at the rate of £160 per annum, with board, &c.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, and accompanied by copies of three recent testimonials, should be sent to the SECRETARY.

Surrey County Council.

PUBLIC HEALTH DEPARTMENT.

HOUSE OFFICER (A), Male or Female, required at EPSOM COUNTY HOSPITAL, Dorking-road, Epsom, to commence duty as soon as possible. Salary £120 per annum, plus full board, lodging, and laundry. R practitioners within three months of qualification may apply when appointment will be for a period of six months.

Applications, stating age, qualifications, and nationality, should be sent to the Medical Superintendent of the Hospital not later than 5th February, 1942.

DUDLEY AUKLAND, Clerk of the Council.

County Hall, Kingston-on-Thames, 30th January, 1942.

Kettering and District General

HOSPITAL.

APPOINTMENT OF A HOUSE PHYSICIAN (A).

Applications are invited from registered medical practitioners for the appointment of a House Physician (A), including R practitioners within three months of qualification when appointment will be for a period of six months. Salary is at the rate of £200 per annum, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the undersigned as soon as possible.

G. W. JACKSON, Secretary-Superintendent.

Royal Victoria Infirmary,

NEWCASTLE UPON TYNE.

Applications are invited for the following posts:—

REGISTRAR (B1) to the ORTHOPÆDIC DEPARTMENT.

TEMPORARY JUNIOR SURGICAL REGISTRAR (B1).

Candidates must be registered in medicine and in surgery. Suitably qualified R practitioners holding B2 or B1 appointments may apply. Suitable alien doctors (Male) will be eligible for consideration. The appointments are for one year and may be renewed annually for a period not exceeding three years. The rate of remuneration is £250 per annum (non-resident).

HOUSE SURGEON (A) to the ORTHOPÆDIC DEPARTMENT, vacant 1st February, 1942. R practitioners within three months of qualification may apply. Suitable alien doctors (Male) will be eligible for consideration. The appointment is for six months, and the remuneration is at the rate of £50 per annum (resident). Intending applicants (Male or Female) are asked to apply to the House Governor for a copy of the regulations governing the appointment, and applications must be on the official form of application.

Applications, accompanied by copies of not more than three testimonials, should be sent in as soon as possible to—

26th January, 1942. A. W. SANDERSON, House Governor.

City of Carlisle.

CITY GENERAL AND FUSEHILL HOSPITALS.

(250 Beds, Special Departments, and Emergency Beds.)

Applications are invited from registered medical practitioners for the appointment of JUNIOR MEDICAL OFFICER (A), fourth Resident. The salary is at the rate of £160 per annum, with full residential emoluments. R practitioners within three months of qualification may apply when appointment will be for a period of six months. The appointment will become vacant on the 1st March, 1942.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of three recent testimonials, should be sent to the MEDICAL OFFICER OF HEALTH, 22, Fisher-street, Carlisle, as early as possible.

City of Coventry.

TEMPORARY ASSISTANT MEDICAL OFFICER FOR CIVIL DEFENCE CASUALTY SERVICES.

Applications are invited from Male registered medical practitioners for the above post. The salary will be £700 per annum, plus war bonus. The appointment will be terminable by one month's notice on either side. The office will be a full-time one and the officer appointed will be under the direction of the Medical Officer of Health. The duties will mainly be to assist in the administration of the emergency casualty services, in central control work, and in shelter supervision.

Applications, stating age, qualifications, experience, and references, should reach the undersigned as soon as possible. Forms are not provided.

A. MASSEY, Medical Officer of Health.

The Council House, Coventry, 26th January, 1942.

Royal Lancaster Infirmary, Lancaster.

Additional RADIOGRAPHER (M.S.R.) required to form part of twenty-four hour service (three in Department). Commencing salary £190 per annum, with meals when on duty. F.S.S.

Applications, giving full particulars of training and experience, if any, should be addressed to—

FRANK A. MILNES, Superintendent-Secretary.

Llanelly and District General Hospital.

Applications are invited from registered medical practitioners (Male or Female) for appointment as JUNIOR HOUSE SURGEON (A). The post became vacant on 23rd January, 1942. R practitioners within three months of qualification may apply when appointment will be for a period of six months; otherwise may be extended. The salary is at the rate of £175 per annum, with the usual residential emoluments.

Applications, stating age, qualifications, and two recent testimonials, to be sent to the undersigned.

T. E. PIPE, Secretary-Superintendent.

Princess Royal Hospital, Swansea.

Applications are invited from qualified medical practitioners (Male) for the post of HOUSE PHYSICIAN (A) at the above Hospital. R practitioners within three months of qualification may apply when appointment will be for a period of six months. Salary £200 per annum, non-resident.

Applications, stating age, qualifications, and experience, should be sent to the MEDICAL SUPERINTENDENT as soon as possible.

Union of South Africa.

Required, fully qualified RADIOLOGIST for Natal Provincial Administration, ADDINGTON HOSPITAL, DURBAN. (1) Three years' contract; (2) salary £1200 per annum; (3) selected candidate to be under thirty-six years of age (if possible); (4) passage paid to Durban.

Forms of application (in duplicate) obtainable from SECRETARY, Office of the High Commissioner for the Union of South Africa, Trafalgar-square, London, W.C.2.

SACRAL ANAESTHESIA IN OBSTETRICS

with

★ TRADE MARK **PERCAINE** REGISTERED ★

A British Product

"A notable feature was the constancy of the intensity of the anaesthesia★ produced, as evidenced by the complete abolition of the 1st stage pains, the easy passage of the head through the pelvis, and the slight pain experienced at the crowning of the head. Such an anaesthesia is amply adequate for normal labour; it will permit intra-uterine manipulations to be made and perineal lacerations to be repaired, but is not sufficient to enable delivery by the forceps to be completed with comfort to the patient."

J. Obstet. Gynaec. (1941), 48, 84.

★ The anaesthetic used was **PERCAINE SOLUTION 1:1000 in normal saline.**

The Percaine Handbook, Ciba Handbook No. 2, a 52-page survey of the Pharmacology, Toxicology, and Clinical Applications of Percaine, will be sent on request to members of the Medical and Allied Professions.

THE LABORATORIES, HORSHAM, SUSSEX.

TELEPHONE: HORSHAM 1234 *TELEGRAMS:* CIBALABS, HORSHAM